=CEILING(-7.5,-2) → -8   Expl: Multiples of -2 are -2,-4,-6,-8,-10.... -7.5 is between -6 & -8 but -8 is away from zero ∴ -8

=CEILING(7.5,3) → 9

=CEILING(-7.5,-3) → -9

=CEILING(7.5,4) → 8

=CEILING(-7.5,-4) → -8

=CEILING(17,2) → 18

=CEILING(-17,-2) → -18

=CEILING(17,3) → 18

=CEILING(-17,-3) → -18

=CEILING(17,4) → 20

=CEILING(-17,-4) → -20

=CEILING(1.5,0.2) → 1.6

=CEILING(-1.5,-0.2) → -1.6

=CEILING(17,-4) → #NUM! (ERROR)

=CEILING(-17,4) → #NUM! (ERROR)

Note In FLOOR( ) and CEILING( ), both the numbers must have same sign.

SUM( ): Adds all the numbers in a range of cells. If there is a text entry in the range then it will be ignored but if text is given as an argument, then it will give an error.

	A	B
1	Sales	5
2	1000	"10"
3	5000	7
4	9000	True
5		3

=SUM(A2:A4) → 15000

=SUM(A2:A4,3000) → 18000

=SUM(A2,A4) → 10000

=SUM(A1:A4) → 15000

=SUM(A1:A5) → 15000

=SUM(10,50,90) → 150

Excel Basics, Calculations and Functions

=SUM("SALES",100,200) → #VALUE! (ERROR)
(Text Argument "SALES")

=SUM(B1:B5) → 15

=SUM(B1,B3,B5) → 15

=SUM(5,"10",7,True,3) → 26

Expl^n: Text number "10" is converted into number 10 and True is converted to 1

∴ 5+10+7+1+3 = 26. Conversion will take place only if values are given as an argument. In case of range or cell reference; text values, logical values will be ignored.

=SUM(A1:B5) → 15015

SUMIF( ): Adds all the numbers in a range of cells for which given condition is true. If sum_range (second range) is given then values from sum_range are added otherwise values from range (first range) are added where the given condition is true.

Syntax

SUMIF(range, condition, [sum-range])

Consider the following worksheet :

	A	B	C	D	E
1	GRADE	BASIC	HRA	PF	NET
2	A	1000	150	80	1070
3	B	4000	600	320	4280
4	B	5000	750	400	5350
5	A	3000	450	240	3210

To take the total of NET where BASIC is above 3,500; the formula will be:

=SUMIF(B2:B5,">3500",E2:E5) → 9630

To take total of BASIC where BASIC is above 3,500; the formula will be:

=SUMIF(B2:B5,">3500") → 9000

To take total of HRA where GRADE is 'A'; the formula will be:

=SUMIF(A2:A5,"A",C2:C5) → 600

To take total of PF where PF is 320 or less; the formula will be:

=SUMIF(D2:D5,"<=320") → 640

To take total of NET where PF is 320 or less; the formula will be:

=SUMIF(D2:D5,"<=320",E2:E5) → 8560

Note: In second and fourth example Sum_range is not given therefore sum of first range.

=SUMIF(A2:A5,"A") → 0

- STATISTICAL FUNCTIONS -

MAX( ): This function is used to find highest number between given range of data. If there is a text entry in the range then it will be ignored but if text is given as an argument, then it will give an error.

	A
1	Sales
2	1000
3	5000
4	9000
5	

=MAX(A1:A4) → 9000
=MAX(A2:A4) → 9000
=MAX(A1:A4,8000) → 9000
=MAX(A1:A4,80000) → 80000
=MAX(10,30,20) → 30
=MAX(10,"ABC",20) → #VALUE! (ERROR)

MIN( ): This function is used to find smallest number between given range of data. If there is a text entry in the range then it will be ignored but if text is given as an argument, then it will give an error.

	A
1	Sales
2	1000
3	5000
4	9000
5	

=MIN(A1:A4) → 1000
=MIN(A2:A4) → 1000
=MIN(A1:A4,8000) → 1000
=MIN(A1:A4,800) → 800
=MIN(10,30,20) → 10
=MIN(10,"ABC",20) → #VALUE! (ERROR)

AVERAGE( ): This function is used to find average of given numbers. If there is a text entry in the range then it will be ignored but if text is given as an argument, then it will give an error.

	A
1	Sales
2	1000
3	5000
4	9000
5	

=AVERAGE(A1:A4) → 5000
=AVERAGE(A2:A4) → 5000
=AVERAGE(A2:A4,1000) → 4000
=AVERAGE(10,25,15) → 16.66667
=AVERAGE(10,20,"SALES") → #VALUE! ERROR

AVERAGEIF( ): This function is used to find average of all the numbers in a range of cells for which given condition is true. If average_range (second range) is given then values from average_range are considered otherwise values from range (first range) are considered where the given condition is true.

Syntax

AVERAGEIF(range, condition, [average-range])

Consider the following worksheet :

1	
2	
3	
4	
5	

To take th
=AVERA
To take a
=AVERA
To take a
=AVER
To take
formula
=AVER
To take
=AVER
To take
be:
=AVE
To take
=AVE

Note:
range.
=AVE
=AVE
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and
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SF8/33

	A	B	C	D	E
1	NAME	GRADE	DEPT	BASIC	NET
2	AJAY	A	A/C	1000	1070
3	SUNIL	B	H.R.	4000	4280
4	VIJAY	B	ADMN	5000	5350
5	ANIL	A	SALES	3000	3210

To take the average of NET where BASIC is above 3,500; the formula will be:

=AVERAGEIF(D2:D5,">3500",E2:E5)　　　　　　　→　4815

To take average of BASIC where BASIC is above 3,500; the formula will be:

=AVERAGEIF(D2:D5,">3500")　　　　　　　→　4500

To take average of basic where GRADE is 'A'; the formula will be:

=AVERAGEIF(B2:B5,"A",D2:D5)　　　　　　　→　2000

To take average of NET where department name is starting with letter A; the formula will be:

=AVERAGEIF(C2:C5,"A*",E2:E5)　　　　　　　→　3210

To take average of NET where Names are ending with JAY; the formula will be:

=AVERAGEIF(A2:A5,"*JAY",E2:E5)　　　　　　　→　3210

To take average of NET where Names are not ending with JAY; the formula will be:

=AVERAGEIF(A2:A5,"<>*JAY",E2:E5)　　　　　　　→　3745

To take average of BASIC where Names contains letter A; the formula will be:

=AVERAGEIF(A2:A5,"*A*",D2:D5)　　　　　　　→　3000

Note: *In second example Average_range is not given therefore average of first range.*

=AVERAGEIF(A2:A5,"A*")　　　→　#DIV/0! (Error –Average of Text)

=AVERAGEIF(A2:A5,"J*",E2:E5)　　　→　#DIV/0! (Error-No Record)

COUNT( ): Counts the number of cells that contains numbers. Remember Date and Time is treated as number. If there is a text entry in the range or as an argument then it will **not** give an error.

	A
1	Sales
2	1000
3	5000
4	9000
5	9-Jul-2009

=COUNT(A1:A4)　　　　　　　→　3

=COUNT(A2:A4)　　　　　　　→　3

=COUNT(A1:A5)　　　　　　　→　4

=COUNT(A2:A5)　　　　　　　→　4

=COUNT(10,20,30)　　　　　　　→　3

=COUNT(10,"ABC",20)　　　　　　　→　2

COUNTA( ): Counts the number of cells that are not empty. If there is a text entry in the range or as an argument then it will **not** give an error.

	A
1	Sales
2	1000
3	#DIV/0!
4	TRUE
5	9-Jul-2009
6	
7	5:30 AM

=COUNTA(A1:A7) → 6

=COUNTA(A1:A5) → 5

=COUNTA(A1:A6) → 5

=COUNTA(A2:A7) → 5

=COUNTA(A1:A7,2) → 7

=COUNTA(A1:A7,"TWO") → 7

=COUNTA(A1:A7,4,"FOX") → 8

=COUNTA(10,20,30) → 3

=COUNTA(10,"ABC",20) → 3

COUNTBLANK( ): Counts the number of cells that are empty. If there is a text entry in the range or as an argument then it will **not** give an error.

	A	B
1	Sales	
2	1000	
3	#DIV/0!	
4	TRUE	
5	9-Jul-2009	
6		
7	5:30 AM	

=COUNTBLANK(A1:A7) → 1

=COUNTBLANK(A1:A5) → 0

=COUNTBLANK(A1:A6) → 1

=COUNTBLANK(A2:A7) → 1

=COUNTBLANK(A1:B7) → 8

=COUNTBLANK(B1:B7) → 7

COUNTIF( ): This function will count number of cells that are satisfying a given condition.

	A	B
1	GRADE	BASIC
2	A	1000
3	B	4000
4	B	5000
5	A	3000

=COUNTIF(A2:A5,"A") → 2

=COUNTIF(B2:B5,">2000") → 3

=COUNTIF(B2:B5,"<=3000") → 2

LARGE( ): This function returns the Kth largest value in a data set. You can use this function to select a value based on its relative standing. For example, you can use LARGE to return the highest, runner-up, or third-place value.

Syntax

LARGE(array,k)

Excel Basics, Calculations and Functions

Array is the array or range of data for which you want to determine the Kth largest value.

K is the position (from the largest) in the array or cell range of data to return.

	A	B
1	**Data-1**	**Data-2**
2	18	14
3	21	16
4	17	12
5	15	14
6	20	16

=LARGE(A2:A6,1) → 21

=LARGE(A2:A6,3) → 18

=LARGE(A2:A6,4) → 17

=LARGE(A2:A6,2) → 20

=LARGE(B2:B6,1) → 16

=LARGE(B2:B6,2) → 16

=LARGE(B2:B6,3) → 14

=LARGE(A2:B6,6) → 16

SMALL( ): This function returns the Kth smallest value in a data set. You can use this function to select a value based on its relative standing. For example, you can use SMALL to return the lowest, second-lowest, or third-lowest value.

Syntax

SMALL(array,k)

Array is the array or range of data for which you want to determine the Kth smallest value.

K is the position (from the smallest) in the array or cell range of data to return.

	A	B
1	**Data-1**	**Data-2**
2	18	14
3	21	16
4	17	12
5	15	14
6	20	16

=SMALL(A2:A6,1) → 15

=SMALL(A2:A6,3) → 18

=SMALL(A2:A6,4) → 20

=SMALL(A2:A6,2) → 17

=SMALL(B2:B6,1) → 12

=SMALL(B2:B6,2) → 14

=SMALL(B2:B6,3) → 14

=SMALL(A2:B6,6) → 16

CORREL( ): This function returns the correlation coefficient of the array1 and array2 cell ranges. Use the correlation coefficient to determine the relationship between two properties. For example, you can examine the relationship between a location's average temperature and the use of air conditioners.

Syntax

CORREL(array1,array2)

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Array1 is a cell range of values.

Array2 is a second cell range of values.

The equation for the correlation coefficient is:

$$Correl(X, Y) = \frac{\sum(x-\bar{x})(y-\bar{y})}{\sqrt{\sum(x-\bar{x})^2 \sum(y-\bar{y})^2}}$$

	A	B
1	Data-x	Data-y
2	18	14
3	21	16
4	17	12
5	15	14
6	20	16

=CORREL(A2:A6,B2:B6) → 0.725907953

- DATE & TIME FUNCTIONS -

DATE( ): This function is used to display a given date as per regional format. You have to give a date as year, month, and day. If the cell format is changed to General, then excel will display serial number for the date. Default century is always 19 for this function.

=DATE(2024,11,7)	→	07-11-2024
=DATE(2024,10,15)	→	15-10-2024
=DATE(1994,12,25)	→	25-12-1994
=DATE(94,12,25)	→	25-12-1994
=DATE(09,8,15)	→	15-08-1909
=DATE(1994,15,25)	→	25-03-1995 (Month 15 .: March of next year)
=DATE(2004,11,33)	→	03-12-2004 (Day 33 therefore 3 of December)

When you enter a **date as a text value**, Excel interprets the year as follows:

☐ **00 to 29:** Excel interprets the two-digit year values 00 to 29 as the years 2000 to 2029. For example, if you type the date 15-08-29, Excel assumes the date is 15th August, 2029.

☐ **30 to 99:** Excel interprets the two-digit year values 30 to 99 as the years 1930 to 1999. For example, if you type the date 15-8-30, Excel assumes the date is 15th August, 1930.

DATEVALUE( ): Gives serial number for given date-text. Date-text means date in quotes.

Excel Basics, Calculations and Functions

=DATEVALUE("1-Jan-1900") → 1

=DATEVALUE("1-Feb-1900") → 32

=DATEVALUE("1-2-1900") → 32

=DATEVALUE("31-Dec-1900") → 366

=DATEVALUE("31-Dec-2023") → 45291

=DATEVALUE("31-Dec-23") → 45291

=DATEVALUE(DATE(2023,12,31)) → 45291 (Nested Function)

DAY( ): Gives day of the month for the given serial number or date-text.

=DAY("25-Dec-2024") → 25

=DAY("27-12-2024") → 27

=DAY(32) → 1 (32 = 1-Feb-1900)

=DAY(DATE(2024,12,31)) → 31 (Nested Function)

If cell **A1** contains **15-Aug-2010** =DAY(A1) → 15

MONTH( ): Gives month of the year for the given serial number or date-text. Answer of the function is numeric.

=MONTH("25-Dec-2024") → 12 (December ∴ 12)

=MONTH("27-12-2024") → 12

=MONTH(32) → 2 (32 = 1-Feb-1900)

=MONTH(DATE(2024,12,31)) → 12 (Nested Function)

If cell **A1** contains **15-Aug-2010**

=MONTH(A1) → 8

YEAR( ): Gives year for the given serial number or date-text. Answer of the function is numeric and it is always 4 digits.

=YEAR("25-Dec-2024") → 2024

=YEAR("27-12-2024") → 2024

=YEAR(32) → 1900 (32 = 1-Feb-1900)

=YEAR("8/15/24") → 2024

=YEAR("8/15/30") → 1930

=YEAR("8/15/29") → 2029

=YEAR(DATE(2024,12,31)) → 2024 (Nested Function)

If cell **A1** contains **15-Aug-2024**

=YEAR(A1) → 2024

WEEKDAY( ): Gives day of the week for the given serial number or date-text. Answer of this function is numeric.

If return type is omitted or 1 then Sunday = 1, Monday = 2.....Saturday = 7.

=WEEKDAY("31-Dec-2024") → 3 (Tuesday ∴ 3)

=WEEKDAY("30-12-2024") → 2 (Monday ∴ 2)

=WEEKDAY("1-Jan-2025") → 4 (Wednesday ∴ 4)

=WEEKDAY(DATE(2024,12,31)) → 3 (Nested Function)

(Tuesday ∴ 3)

If cell A1 contains 15-Aug-2010

=WEEKDAY(A1) → 1 (Sunday ∴ 1)

=WEEKDAY("31-Dec-2024",1) → 3 (Tuesday ∴ 3)

=WEEKDAY("30-12-2024",1) → 2 (Monday ∴ 2)

If return type is 2 then Monday = 1, Tuesday = 2 ....Sunday = 7.

=WEEKDAY("31-Dec-2024",2) → 2 (Tuesday ∴ 2)

=WEEKDAY("30-12-2024",2) → 1 (Monday ∴ 1)

If return type is 3 then Monday = 0, Tuesday = 1 ....Sunday = 6.

=WEEKDAY("31-Dec-2024",3) → 1 (Tuesday ∴ 1)

=WEEKDAY("30-12-2024",3) → 0 (Monday ∴ 0)

Similarly, if return type is:

11 then   Monday = 1, Tuesday = 2, ... Sunday = 7.

12 then   Tuesday = 1, Wednesday = 2, ... Monday = 7.

:   :

17 then   Sunday = 1, Monday = 2, ... Saturday = 7.

DAYS360( ): Gives you, number of days between two given dates based on an assumption that there are 360 days in a year i.e. 12 months of 30 days.

=DAYS360("1-Dec-2024","1-Jan-2025") → 30

=DAYS360("1-Dec-2024","1-Dec-2025") → 360

=DAYS360("1-Dec-2024","1-Dec-2026") → 720

=DAYS360("1-Dec-2025","1-Dec-2024") → -360

=DAYS360(DATE(94,8,15),DATE(94,9,15)) → 30 (Nested Function)

TIME( ) : Gives time in hh:mm AM/PM form (12 Hour) for given time. You have to give the time as per 24 hour clock with hh,mm,ss.

=TIME(18,30,45)

=TIME(12,0,0) → 6:30 PM

=TIME(6,34,54) → 12:00 PM

→ 6:34 AM

Excel Basics, Calculations and Functions

=TIME(16,66,0) → 5:06 PM

TIMEVALUE( ): This function is used to get serial number for time-text. Time text means time in quotes.

=TIMEVALUE("6:00 PM")

=TIMEVALUE("18:00") → 0.75

=TIMEVALUE("6:00") → 0.75

=TIMEVALUE("12:00") → 0.25

=TIMEVALUE("12:00 AM") → 0.50

→ 0.00

TODAY( ): This function is used to get current date. Date will be displayed as per regional format.

Assuming today is 15th October, 2024

=TODAY() → 15-10-2024

NOW( ): This function is used to get current date as well as current time. Date will be as per regional format and time as per 24 hours clock. There will be a space between date and time.

Assuming today is 15th October, 2024 and time is 6:30 in the evening.

=NOW()

→ 15-10-2024 18:30

- LOGICAL FUNCTION -

IF( ): This function is used to check a condition, if a condition is true then true part of IF is solved otherwise false part of IF is solved.

=IF(condition, true, false)

AND( ): This function is used to combine two or more conditions. If all the conditions are true then it will return True otherwise False.

OR( ): This function is used to combine two or more conditions. If any one condition is true then it will return True otherwise False.

	A	B	C
1	GRADE	BASIC	HRA
2	A	1000	
3	B	4000	
4	B	5000	
5	A	3000	

=AND(B2>500, B3>3000) → TRUE

=AND(B2>800, B3 = 4000, B4 < 6000) → TRUE

=AND(B2 < 500, B3 > 3000) → FALSE

=OR(B2>500, B3>3000) → TRUE

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=OR(B2>800, B3 = 4000, B4 < 6000) → TRUE

=OR(B2 < 500, B3 > 3000) → TRUE

=OR(B2 < 500, B3 < 3000) → FALSE

=OR(B2=4000, B3 >10000, B4 < 3200) → FALSE

To find HRA as 10% of BASIC, if BASIC is above 3500, otherwise HRA is 12% of BASIC; the formula at cell C2 will be as follows:

=IF(B2>3500,B2*10%,B2*12%)

If BASIC is 4000 or less then HRA as 9% of BASIC, otherwise HRA is 11% of BASIC; the formula at cell C2 will be as follows:

=IF(B2<=4000,B2*9%,B2*11%)

To find HRA as 10% of BASIC, if BASIC is above 3500 but less than 4500, otherwise HRA is 12% of BASIC; the formula at cell C2 will be as follows:

=IF(AND(B2>3500,B2<4500),B2*10%,B2*12%)

To find HRA as 10% of BASIC, if BASIC is below 3500 or basic is above 4500, otherwise HRA is 12% of BASIC; the formula at cell C2 will be as follows:

=IF(OR(B2<3500,B2>4500),B2*10%,B2*12%)

To find HRA as 10% of BASIC, if BASIC is below 1500, if basic is 1500 or above but less than 3400 then HRA is 12% of BASIC otherwise HRA is 14% of BASIC; the formula at cell C2 will be as follows:

=IF(B2<1500,B2*10%,IF(B2<3400,B2*12%,B2*14%))

This example is of Nested If. [IF( ) within IF( ) is called as nested IF.]

Note: *In all the above cases after entering the formula at cell C2; click at cell C2 and double click at fill handle to copy the formula for the rest.*

– DATABASE (LOOKUP) FUNCTIONS –

VLOOKUP( ): VLOOKUP stands for vertical look up. This function is used to search a value in the leftmost (first) column of the given range, and then returns a value in the same row from a column you specify in the function.

Syntax

VLOOKUP(search_value, range, col_number, [logical value])

Search_value is the value to search in a range. If search_value is less than smallest value then #N/A (ERROR) is returned. If search_value is greater than the highest value and logical value is TRUE then it uses the largest value in the first column of the range.

Range is the range of values where the function will work.

Col_number is the column number in the range from which matching value must be returned. If column number is less than 1 then #VALUE (ERROR) is

returned. If column number is greater than the number of columns in the range then #REF (ERROR) is returned.

If logical value is omitted or TRUE then values in the first column of the range must be in ascending order; otherwise, VLOOKUP may not give you correct answer. If logical value is FALSE then range does not need to be sorted.

Logical value specifies whether you want VLOOKUP to search for exact match or approximate match. If TRUE or omitted, an approximate match is returned i.e. if exact match is not found, the next largest value that is less than search_value is returned. If logical value is FALSE then VLOOKUP will search for exact match. If exact match is not found then #N/A (ERROR) is returned.

Values in the first column of the range can be text, numbers or logical values. Uppercase and lowercase text is equivalent.

Example: 1

	A	B
3	%	Grade
4	35	Pass Class
5	45	Second Class
6	60	First Class
7	75	Distinction

=VLOOKUP(66,A4:B7,2) → First Class

=VLOOKUP(82,A4:B7,2) → Distinction

=VLOOKUP(33,A4:B7,2) → #N/A (ERROR)

=VLOOKUP(66,A4:B7,2,TRUE) → First Class

=VLOOKUP(66,A4:B7,2,FALSE) → #N/A(ERROR)

=VLOOKUP(60,A4:B7,2,FALSE) → First Class

=VLOOKUP(60,A4:B7,3) → #REF(ERROR)

=VLOOKUP(45,A4:B7,0) → #VALUE(ERROR)

Example: 2

	A	B	C	D	E	F	G
6			GRADE	BASIC	HRA	PF	NET
7			1	1000	150	80	1070
8			2	4000	600	320	4280
9			3	5000	750	400	5350
10			4	3000	450	240	3210

To know HRA for grade 4, the function will be as follows:

=VLOOKUP(4,C7:G10,3) → 450

Explanation: 4 is the value to search. C7:G10 is the range to search. 3 is the column number. (Notice that HRA is in 3rd column of the range). Logical value is omitted therefore TRUE.

To know NET for grade 2, the function will be as follows:

=VLOOKUP(2,C7:G10,5) → 4280

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Example: 3

	A	B 10 DAYS	C 14 DAYS
16	TOUR	10 DAYS	14 DAYS
17	EUROPE	121000	165000
18	FAR EAST	58775	75000
19	MALDIVES	100000	130000
20	MAURITIUS	68775	82000
21	SWITZERLAND	133335	168775

=VLOOKUP("MAURITIUS",A17:C21,3)   →   82000

=VLOOKUP("far east",A17:C21,2)   →   58775

=VLOOKUP("MALDIVES",A17:C21,1)   →   MALDIVES

=VLOOKUP("ROME",A17:C21,2)   →   68775

Explanation: The word SWITZERLAND is greater than the word ROME, therefore to previous cell i.e. MAURITIUS because logical value is omitted therefore TRUE.

=VLOOKUP("ROME",A17:C21,2,FALSE)   →   #N/A (ERROR)

Explanation: Logical value FALSE that means exact match, but exact match is not found therefore #N/A (ERROR).

Example 4 :

Consider the following worksheet. Use VLLOKUP() to find Grade in column C by using a grade table given in F1:G5

	A	B	C	D	E	F	G
1	Name	%	Grade			%	Grade
2	Smita	80				35	Pass Class
3	Anita	50				45	Second Class
4	Tania	60				60	First Class
5	Sancia	62				75	Distinction
6	Cathy	78					
7	Vijaya	40					
8							

To find Grade by using VLOOKP

1. Click at cell C2.

2. Type the formula as

=VLOOKUP(B2, $F$2:$G$5, 2)↵ [OR] =VLOOKUP(B2, F$2:G$5, 2)↵

3. Click at cell C2 and drag the fill handle up to cell C7.

Note: Instead of dragging the fill handle in the last step, you can double click on the fill handle.

Alternatively, you can first select the range C2:C7, then type the same formula and press Ctrl + Enter.

Imp. Note: If you are going to drag the VLOOKUP formula then for the search value the cell reference must have relative reference and for range, you must use either absolute reference or mixed reference.

	A	B	C	D	E	F	G
1	Name	%	Grade			%	Grade
2	Smita	80	Distinction			35	Pass Class
3	Anita	50	Second Class			45	Second Class
4	Tania	60	First Class			60	First Class
5	Sancia	62	First Class			75	Distinction
6	Cathy	78	Distinction				
7	Vijaya	40	Pass Class				

HLOOKUP( ): HLOOKUP stands for Horizontal look up. This function is used to search a value in the first row of the given range, and then returns a value in the same column from a row you specify in the function.

If logical value is omitted or TRUE then values in the first row of the range must be in ascending order; otherwise HLOOKUP may not give you correct answer. If logical value is FALSE then range does not need to be sorted.

Syntax

HLOOKUP(search_value, range, row_number, [logical value])

It is similar to VLOOKUP but it will search in the first row instead of leftmost (first) column.

	A	B	C	D	E	F
16	TOUR	EUROPE	FAR EAST	MALDIVES	MAURITIUS	SWITZERLAND
17	10 DAYS	121000	58775	100000	68775	133335
18	14 DAYS	165000	75000	130000	82000	168775

=HLOOKUP("MAURITIUS",B16:F18,3) → 82000

=HLOOKUP("far east",B16:F18,2) → 58775

=HLOOKUP("MALDIVES",B16:F18,1) → MALDIVES

=HLOOKUP("ROME",B16:F18,2) → 68775

Explanation: The word SWITZERLAND is greater than the word ROME, therefore to previous cell i.e. MAURITIUS because logical value is omitted therefore TRUE.

=HLOOKUP("ROME",B16:F18,2,FALSE) → #N/A (ERROR)

Explanation: Logical value FALSE that means exact match, but exact match is not found therefore #N/A (ERROR).

FINANCIAL FUNCTIONS

While using financial functions you will have to be sure that you are consistent about the units you use for specifying, the interest rate and the number of periods.

If payments are made

Monthly	divide Annual Interest Rate by	12
Quarterly	divide Annual Interest Rate by	4
Half Yearly	divide Annual Interest Rate by	2

If the "term" is in Years, then to obtain the total number of periods, you have to multiply the years by the number of payments made in a year:

Monthly	multiply Years by	12
Quarterly	multiply Years by	4
Half Yearly	multiply Years by	2

If you are making cash **payment**, then show them as **negative** numbers. If you are receiving cash, then show them as **positive** numbers.

PV: is present value that is value of investment or loan today.

FV: is Future Value that is value of investment in future.

nper: Number of periods, i.e. the total number of payment periods either in years, months, days etc.

per: specifies the period of calculation (installment number) and must be in the range 1 to nper.

Type: shows when payments are made- whether at end of period (0) or at the beginning (1). Type can be either 0 or 1. If type is omitted, it is assumed as 0.

PMT( ): Calculates the payment for a loan, based on constant payments and a constant interest rate.

Syntax

PMT(rate,nper,pv,[fv],[type])

PPMT( ): Returns the payment on the principal for a given period for an investment based on periodic, constant payments and a constant interest rate.

Syntax

PPMT(rate,per,nper,pv,[fv],[type])

IPMT( ): Returns the interest payment for a given period for an investment based on periodic, constant payments and a constant interest rate.

Syntax

IPMT(rate,per,nper,pv,[fv],[type])

Example: From a bank you have taken a loan of ₹ 10,00,000 with interest rate at 8% p.a. and you are going to repay it in 5 years with monthly installments, to be paid at the end of each month. To know the monthly installment, you can use this function as follows:

=PMT(8%/12,5*12,1000000)   →   ₹ -20,276.39

Which means you have to pay monthly installment of ₹ 20,276.39. This amount 20,276.39 includes principal amount as well as interest amount. You received loan amount therefore 10,00,000 is a **positive** amount and you will be **paying** EMI therefore 20,276.39 is a **negative** amount.

Note: In the above example we are assuming that we are taking a loan of ₹10,00,000; so, we will receive loan amount so 10,00,000 is a Positive amount and we will be paying EMI so, EMI amount is Negative. If you are giving loan then loan amount will be Negative and then EMI amount will be Positive, because if you give loan then you will receive EMI amount.

=PMT(8%/12,5*12,-1000000)   →   ₹ 20,276.39

Note: As installments are monthly the interest rate has to be monthly therefore interest rate is divided by 12.

Alternatively, it can be calculated as follows:

	A	B	C	D	
B4		=PMT(B1/12,B2*12,B3)			← Formula
1	Rate of Interest	8%			
2	No. of Years	5			
3	Loan Amount	1000000			
4	EMI	₹ -20,276.39			← Answer

Note: You can calculate PMT with the help of calculator by using following Formula

$$P = \frac{C}{i}[1 - (1 + i)^{-n}]$$

Here, P = 1000000, C= ? , i = 8% p.a. = 0.08 p.a. = 0.08/12 = 0.00666666666 per month

n = 5 years = 5 * 12 = 60

$$1000000 = \frac{C}{0.00666666666}[1 - (1 + 0.00666666666)^{-60}]$$

20276.3942934 = C

20,276.39 = C

Now if you want to know in the first monthly installment of ₹ 20,276.39, how much you are paying towards principal amount then the formula will be as follows:

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=PPMT(8%/12,1,5*12,1000000) → ₹ -13,609.73

So, in the first installment, out of 20,276.39 you are paying 13,609.73 toward principal and the rest towards interest. Initially the interest amount is more b gradually it will decrease.

Alternatively, it can be calculated as follows:

		fₓ	=PPMT(B1/12,B2,B3*12,B4)	
B5				
	A	B	C	D
1	Rate of Interest	8%		
2	Installment No.	1		
3	No. of Years	5		
4	Loan Amount	1000000		
5	PPMT	₹ -13,609.73		

To know how much you are paying towards principal amount in the secon installment, the formula will be as follows:

=PPMT(8%/12,2,5*12,1000000) → ₹ -13,700.46

In the second installment, out of 20,276.39 you are paying 13,700.46 toward principal and the rest towards interest.

In the last installment (60th), principal amount will be calculated as follows:

=PPMT(8%/12,60,5*12,1000000) → ₹ -20,142.11

Now if you want to know in the first monthly installment of ₹ 20,276.39, how much you are paying towards interest then you can find it out by subtracting the principal payment from the payment (20276.39 – 13609.73) or by the formula a follows:

=IPMT(8%/12,1,5*12,1000000) → ₹ -6,666.66

If you are going to make payments at the beginning of a month, then the formula will be as follows:

=PMT(8%/12,5*12,1000000,,1) → ₹ -20,142.11

Remember: PMT( ) = PPMT( ) + IPMT( )

NPER( ): It is used to find number of periods for an investment based on periodic constant payments and a constant interest rate.

Syntax

NPER(rate, pmt, pv, [fv],[type])

To find period, if payment is 20276.39, loan amount is 10,00,000 and rate o interest is 8% p.a., the formula will be as follows:

=NPER(8%/12,-20276.39,1000000) → 60

So, answer is 60 months = 5 years; answer is in months because rate of interes and EMI is monthly.

	A	B	C	D
B4			=NPER(B1/12,B2,B3)	
1	Rate of Interest			
2	EMI (PMT)	8%		
3	Loan Amount	-20276.39		
4	NPER	1000000		
5		60		

RATE( ): It is used to find interest rate for an investment based on periodic, constant payments.

Syntax

RATE(nper,pmt,pv,[fv],[type],[guess])

	A	B	C	D
B4			=RATE(B1*12,B2,B3)	
1	No. of Years	5		
2	EMI (PMT)	-20276.39		
3	Loan Amount	1000000		
4	Rate	0.666666%		
5				

Note: 0.666666% is the monthly rate as we have given period in terms of months and EMI is also monthly. If you want annual rate then multiply it by 12 which will give you 8% p.a.

PV( ): This function is used to find present value for a loan.

Syntax

PV(rate,nper,pmt,[fv],[type])

	A	B	C	D
B4			=PV(B1/12,B2*12,B3)	
1	Rate of Int (P.A.	8%		
2	No. of Years	5		
3	EMI	-20276.39		
4	Rate	₹ 10,00,000		
5				

FV( ): This function is used to find future value of an investment.

Syntax

FV(rate,nper,pmt,[pv],[type])

Example: If you are going to save ₹ 3,000 every month for next 5 years and interest rate is 8% p.a. then to find out what will be amount you will receive after 5 years, use the following example:

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B4	▾	×	✓	fx	=FV(B1/12,B2*12,B3)		
	A		B		C	D	
1	Rate P.A.		8%				
2	No. of Years		5				
3	Monthly Saving		-3000				
4	Future Value		₹ 2,20,430.57				

Which means if you save ₹ 3,000 every month for 5 years @ 8% p.a. then it will become ₹ 2,20,430.57.

Interest rate given is 8% p.a. and we want monthly interest rate as we are going to save every month so we have to divide 8% by 12.

Period is 5 years but we are going to save monthly so 5 years will be multiplied by 12 to make it monthly.

EXERCISE

A. Multiple Choice Questions – Single correct answer :

1. A cell reference $A$1 is known as _____ reference.

   (a) Relative (b) Absolute (c) Mixed (d) None of These

2. A cell reference $A1 is known as _____ reference.

   (a) Relative (b) Absolute (c) Mixed (d) None of These

3. A cell reference A$1 is known as _____ reference.

   (a) Relative (b) Absolute (c) Mixed (d) None of These

4. A cell reference A1 is known as _____ reference.

   (a) Relative (b) Absolute (c) Mixed (d) None of These

5. _____ key is used to change the cell reference from Relative to Absolute to Mixed.

   (a) F2 (b) F3 (c) F4 (d) F5

6. RIGHT() is a _____ function.

   (a) Text (b) Mathematical (c) Statistical (d) Logical

7. FIXED() is a _____ function.

   (a) Text (b) Mathematical (c) Statistical (d) Logical

8. Which function is used to find length of a string?

   (a) LENGTH() (b) LEN() (c) COUNT() (d) None of These

9. Answer of =ABS(-7.3) will be _____

   (a) 7.3 (b) 7 (c) -7.3 (d) -7

10. Answer of =ABS(7.3) will be _____

    (a) 7.3 (b) 7 (c) -7.3 (d) -7

11. In Excel =SQRT(16) will return _____

    (a) 4 (b) -4 (c) ±4 (d) 256

12. In Excel =SQRT(-16) will return _____

    (a) 4 (b) -4 (c) ±4 (d) ERROR

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13. Answer of =MOD(23,5) will be _____
   (a) 3 (b) 4 (c) 5 (d) None of These

14. Answer of =MOD(5,23) will be _____
   (a) 3 (b) 4 (c) 5 (d) None of These

15. Answer of =MOD(20,5) will be _____
   (a) 3 (b) 4 (c) 5 (d) None of These

16. Answer of =INT(5.7) will be _____
   (a) 5 (b) 6 (c) 7 (d) None oof These

17. Answer of =INT(-5.7) will be _____
   (a) -5 (b) -6 (c) -7 (d) None oof These

18. Answer of =ROUND(76.543,2) will be _____
   (a) 77 (b) 76.5 (c) 76.6 (d) 76.54

19. Answer of =ROUND(76.543,1) will be _____
   (a) 77 (b) 76.5 (c) 76.6 (d) 76.54

20. Answer of =ROUND(76.543,0) will be _____
   (a) 77 (b) 76.5 (c) 76.6 (d) 76

21. Answer of =ROUND(76.543,-1) will be _____
   (a) 70 (b) 80 (c) 77 (d) ERROR

22. Answer of =ROUND(76.543,-2) will be _____
   (a) 70 (b) 80 (c) 100 (d) 0

23. Answer of =ROUND(76.543,-3) will be _____
   (a) 70 (b) 80 (c) 100 (d) 0

24. Answer of =ROUNDDOWN(76.543,2) will be _____
   (a) 75 (b) 76.55 (c) 76.53 (d) 76.54

25. Answer of =ROUNDDOWN(76.543,1) will be _____
   (a) 76.4 (b) 76.5 (c) 76.6 (d) 76.3

26. Answer of =ROUNDDOWN(76.543,0) will be _____
   (a) 77 (b) 76 (c) 75 (d) 70

27. Answer of =ROUNDDOWN(76.543,-1) will be _____
   (a) 70 (b) 80 (c) 76 (d) 75

28. Answer of =ROUNDDOWN(76.543,-2) will be _____
   (a) 70 (b) 80 (c) 100 (d) 0

29. Answer of =ROUNDDOWN(76.543,-3) will be _____
   (a) 70 (b) 80 (c) 100 (d) 0

30. Answer of =ROUNDUP(76.543,2) will be _____
   (a) 77 (b) 76.55 (c) 76.53 (d) 76.54

31. Answer of =ROUNDUP(76.543,1) will be _____
   (a) 76.4 (b) 76.5 (c) 76.6 (d) 76.3

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32. Answer of =ROUNDUP(76.543,0) will be _____
    (a) 77 (b) 76 (c) 75 (d) 70

33. Answer of =ROUNDUP(76.543,-1) will be _____
    (a) 70 (b) 80 (c) 76 (d) 75

34. Answer of =ROUNDUP(76.543,-2) will be _____
    (a) 70 (b) 80 (c) 100 (d) 0

35. Answer of =ROUNDUP(76.543,-3) will be _____
    (a) 1000 (b) 80 (c) 100 (d) 0

36. Answer of =FLOOR(15.5,4) will be _____
    (a) 15 (b) 16 (c) 12 (d) 14

37. Answer of =FLOOR(14,4) will be _____
    (a) 15 (b) 16 (c) 12 (d) 14

38. Answer of =CEILING(15.5,4) will be _____
    (a) 15 (b) 16 (c) 12 (d) 14

39. Answer of =CEILING(14,4) will be _____
    (a) 15 (b) 16 (c) 12 (d) 14

40. Which function is used to count number of cells that contains numbers?
    (a) COUNT() (b) COUNTA() (c) COUNTN() (d) None of these

41. Which function is used to count number of cells that are not empty?
    (a) COUNT() (b) COUNTA() (c) COUNTN() (d) None of these

42. You are given that, 20-October-2024 is Sunday. What will be the answer of =WEEKDAY("20-October-2024")?
    (a) Sunday (b) Sun (c) 1 (d) 7

43. You are given that, 20-October-2024 is Sunday. What will be the answer of =WEEKDAY("20-October-2024",1)?
    (a) Sunday (b) Sun (c) 1 (d) 7

44. You are given that, 20-October-2024 is Sunday. What will be the answer of =WEEKDAY("20-October-2024",2)?
    (a) Sunday (b) Sun (c) 1 (d) 7

45. Which function is used to find EMI of a loan?
    (a) EMI() (b) PMT() (c) PPMT() (d) PV()

46. PV() is used to find _____ Value.
    (a) Positive (b) Present (c) Past (d) Particular

B. State whether the following statement are True/False :

1. User can delete all the worksheets from a workbook.
2. User can change name of a worksheet.
3. User can change the sequence of the worksheets.
4. User can add new worksheets to a workbook.
5. User can delete a sheet from a workbook.

Excel Basics, Calculations and Functions

6. By-default, LEFT() gives one character from the left side.
7. TRIM() is used to remove only leading blank spaces from a string.
8. LEN() is a mathematical function.
9. A function =LEN("F.Y.BMS") will return answer as 5.
10. In Excel there is a function called TODAY().
11. NOW() gives you only Current time.
12. IF() is a logical function.
13. PPMT() + IPMT() = PMT()

C. Questions on Excel Calculations:

1. Calculate total, average, highest & lowest for the following worksheet.

	A	B	C	D
1		Indiana Sales		
2	Product			
3	Splendor Plus	Jun	Jul	Aug
		7887000	5050500	67849000
:	:	:	:	:
:	:	:	:	:
56	Unicorn	2299000	4879900	67404000
57	TOTAL			
58	AVERAGE			
59	HIGHEST			
60	LOWEST			

2. Product description, opening stock qty., purchase qty & sales qty has been entered in first four columns and from row number two to row number thirty-one. First row is used for column headings. Calculate the closing stock assuming that the column heading for closing stock is already entered.

3. Name of the students and the marks scored by them in 4 different subjects are entered in the worksheet from A2 to cell E52 out of which the first row contains the column headings and the other rows contain the data. Find total, average of marks and special average in the column F, G and H respectively. Give your own column headings for these three columns. Special average is average of best three marks.

4. Calculate selling price.

	A	B	C	D
1	Description	Unit Cost	Selling Price	
2	Prod – A	150		
:	:	:	:	
:	:	:		
16	Prod – x	550		
:				18%
:				
49	Profit on Cost			

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5. Calculate following bill.

	A	B	C	D
		My Stores		
1		Price	Quantity	Total
2	Description	229	550	
3	Prod – A	:	:	
:	:	:	:	
:	:	588	200	
46	Prod - x		Total	
47				

6. Name, Grade and Basic Salary is typed in cell A2 to cell C55, out of which first row contains headings. Calculate the following:

   1. DA is 10% of basic salary subject to minimum of ₹ 200.
   2. PF is 8.33% of basic salary or Rs 125 whichever is minimum.
   3. NET is BS + DA– PF; it should be rounded off to nearest upper 10.

7. Name & basic salary of 100 employees are entered in first two columns. The first row contains the column headings calculate HRA, DA, MA, & GROSS. HRA is 13% of basic salary or ₹ 200 whichever is less. DA is 42% of basic salary subject to minimum of ₹ 1000. MA is 18% of basic salary subject to minimum of ₹ 1000 and subject maximum to of ₹10000. Gross = Basic salary + HRA +DA + MA. Gross salary must be rounded off to nearest ten.

8. Name, amount, interest rate and period are entered in cell A3 to cell D89. Calculate simple interest and compound interest in column E & F. Simple Interest= $PNR/100$ and Comp. Int.$=P (1 + R/100)^n - P$. First row contains title whereas second row contains column headings.

9. Calculate marks out of 60 and out of 100 in column C & D for the following worksheet.

	A	B	C	D
1	NAME	Marks out of 40	Marks out of 60	Marks out of 100
2	Lucas	34		
:	:	:	:	
:	:	:		
60	Fredrick	32		

10. Calculate simple and compound interest for the following worksheet.

	A	B	C	D	E
1	NAME	AMOUNT	RATE	S.INT.	C.INT.
2	PHILIP	10000	10.5		
:	:	:	:		
:	:		:		
60	RAYMOND	:	:		
61		290000	13		
62	PERIOD (Years)	7			

11. Consider following worksheet:

	A	B	C	D	E
1			ABC Constructions Ltd.		
2	Worker	Monthly	Absent	Present	Proportionate
3	Name	Basic	Days	Days	Salary
4	:	:	:	:	
:	:	:	:	:	
59	:	:	:		

Assume 25 working days in a month.

12. Type a series 2,4,6,....20 in cell A1 to A10 and then find the total of their squares in cell B12.

13. Calculate depreciation by using SLM for each year.

	A	B	C	D	E
1	COST	DEP. RATE (%)	NO. OF YEARS	YEARS	DEP.
2	100000			1	
3		10	5	2	
4				3	
5				4	
6				5	

14. Calculate depreciation by using SLM for each year.

	A	B	C	D	E	F
1	COST	DEP. RATE	NO. OF YEARS			
2	100000	10%	5			
3						
4	YEARS	1	2	3	4	5
5	DEP.					

15. Cost of an asset is typed in cell A2, Rate of depreciation is typed in cell A4. Calculate depreciation by using Written Down Value method for each year for first 5 years.

16. Calculate depreciation by using SLM & WDV for each year.

	A	B	C	D	E	F
1	COST	DEP. RATE	NO. OF YEARS			
2	200000	10.25%	5			
3				2	3	4	5
4	YEARS	1				
5	SLM-DEP.					
6	WDV-DEP					

17. Cost of an asset is typed in cell B2, Life of an asset in years is typed in cell B3 and scrap value is typed in cell B4. Calculate depreciation for first 4 years.

18. Cost of an asset is typed in cell D1, Life of an asset in years is typed in cell D2 and scrap value is typed in cell D3. Calculate depreciation by using WDV method for first 4 years.

19. Calculate depreciation by using SLM and WDV of an asset for each year.

	A	B	C	D	E	F
			Xyz Ltd.	YEARS	DEP.	W.D.V.
1						
2	COST	100000		1		
3	DEP. RATE (%)	10		2		
4	NO. OF YEARS	5		3		
5				4		
6				5		
7						

20. Cost of an asset is typed in cell B2, Rate of depreciation is typed in cell B3. Calculate depreciation by using Written Down Value method for each year as well as WDV of an asset for first 4 years.

21. You are given cost of an asset and rate of depreciation. Show serial number for the year and depreciation by WDV for first 8 years. Use your own cell references.

22. Calculate HRA, PF and Net Salary for following worksheet in column D, E and F respectively.

	A	B	C
1	HRA RATE	10%	
2	PF RATE	8.33%	
3	NAME	DEPT.	SALARY
4			
:			
:			
55			

23. Consider following worksheet and calculate the following

	A	B	C	D	E
1	2000000	Loan Amt.			
2	11%	Rate P.A.			
3	10	Years (Monthly	Installments)		

Calculate Monthly payment amount of loan in cell D1, Principal payment for 3rd installment in cell D2 and Interest payment for last payment in cell D3.

24. Write only formulas for the following: Assume basic salary is typed in cell **B1**.

(a) HRA is 10% of basic if basic is above 10,000 otherwise HRA is 12% of basic.

(b) HRA is calculated as follows:

Basic Salary	HRA
< 5,000	10%
>= 5,000 but < 7,500	12%
>= 7,500	15%

(c) HRA is calculated as follows:

Basic Salary	HRA
>=10,000	10.5%
<10,000 but >= 8,000	11.25%

Excel Basics, Calculations and Functions

< 8,000 but >= 5,000
< 5,000   12%

15%

(d) HRA is calculated as follows:

Basic Salary   **HRA**

First 8,000

Next 5,000   10%

Rest/ Excess   12%

15%

(e) HRA is 10% of basic salary if basic salary is above 4,000 but below 7,500 otherwise
HRA is 12% of basic salary.

(f) HRA is 11% of basic salary if basic salary is below 5,000 or above 8,500 otherwise
HRA is 12.5% of basic salary.

25. Name, Grade and Basic Salary is typed in cell A2 to cell C55, out of which first row
contains headings. Calculate the following:

  1. HRA is 10% if Grade is 'A' otherwise 12%.

  2. DA is 10% of basic salary subject to minimum of ₹ 200.

  3. MA, for Grade 'A' is 15%, for grade 'B' it is 13% otherwise it is 10%.

  4. PF is 8.33% of basic salary or ₹ 125 whichever is minimum.

  5. NET is BS + HRA + DA + MA – PF; it should be rounded off to nearest upper
10. Also find total net salary payable to Grade 'A' employees in cell A58.

26. Calculate average of marks and result in column D and E respectively. A student is
declared as PASS if he gets 40 or more marks in each subject and the average of
marks is 50 or more otherwise, he is declared as FAIL. Name of all the students is
typed in cell A2 to cell A51, their marks in two subjects are typed in cell B2 to C51.

27. Name of the students and the marks scored by them in 4 different subjects are
entered in the worksheet from cell A2 to cell E52 out of which the first row contains
the column headings and other row contains data. Find Result. A student is
declared as Pass if he gets 35 or more marks in each subject otherwise Fail. Also find
total number of Pass students and total number of Fail students in cell A55 and A56
respectively and give proper headings.

28. Name of the students and the marks scored by them in 4 different subjects are
entered in the worksheet from cell A2 to cell E52 out of which the first row contains
the column headings and other row contains data. Find Result. A student is
declared as Fail if he gets less than 35 in any subject otherwise Pass. Also find total
number of Pass students and total number of Fail students in cell J1 and J2
respectively and give proper headings.

29. Name of the students and the marks scored by them in 6 different subjects are
entered in the worksheet from cell A2 to cell G66 out of which the first row contains
the column headings and other row contains data. Find Result. A student is
declared as Pass if he gets 35 or more marks in each subject, if a student is Pass in 4
or more subjects, then ATKT otherwise Fail. Also find total number of students in
each category of result.

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30. Consider following worksheet:

	A	B	C Hi-Tech Library	D	E
1			Issue	Return	Fine
2	Members	Book	Date	Date	Amount
3	Name	Name	:	:	
4	:	:	:	:	
:	:	:	:	:	
159	:	:	:	:	

Fine is ₹ 2 per day for excess over 10 days. Also find Total fine amount.

31. Name of ten employees and their basic salary is entered in cell A2 to B11. First row contains column headings. Calculate Tax as per following schedule in column C and education cess in column D. Education cess is 10% on Tax.

Basic Salary	Tax
First 4500	Nil
Next 3500	7%
Rest	10%

32. Consider following worksheet:

	A	B	C	D	E
1		Hi-Tech Company Ltd.			
2	Employee	Monthly			
3	Name	Salary			
4	:	:			
:	:	:			
55	:	:			

Calculate monthly income tax in column C as per the following schedule:

Annual Salary	Income Tax
First 1,80,000	Nil
Next 1,20,000	10%
Next 1,00,000	20%
Excess	30%

Also find total number of employees where monthly salary is above 10,000.

33. Name of the salesman and his sales are entered in cell A1 to cell B20. First row contains headings. Calculate commission, additional commission and total commission. Commission is 8% of sales. If sales exceed ₹ 35,000 then an additional commission of 3% of sales exceeding ₹ 35,000 is given. Also find Total of total commission.

Excel Basics, Calculations and Functions

34. Consider following worksheet:

	A	B	C	D	E
1					
2	Name		ABC Ltd.		
3	:	Hourly.Rate	Hrs.Worked	Reg. Pay	O.T. Pay
:	:	:	:		
54	:	:	:		

First 35 hours are considered as regular hours. Hours exceeding 35 is considered as overtime. Overtime is paid at double of the normal rate.

35. Consider following worksheet:

	A	B	C
1		Mumbai Traffic Police	
2	Parking Violations	Action To Be Taken	
3	1	Polite Warning Letter	
4	3	Strong Warning Letter	
5	4	Collect Fine	
6	6	Revoke Licence	
7			
8			
9	Name	No of Parking Violations	Action
10	:	:	
:	:	:	
30	:	:	

Table showing the actions to be taken for parking violations is given in cell A2:B6
Name and Actual parking violations are typed in cell A10 to cell B30. Find the action
based on the table given using VLOOKUP.

36. Consider the following worksheet:

	A	B	C	D	E
1			Red Hat Co. Ltd.		
2		Grade	HRA	DA	BONUS
3		A	7000	12000	20000
4		B	5000	13000	15000
5		C	3000	15000	25000
6		D	1000	18000	30000
7					
8				DA	BONUS
9	Name	Grade	HRA		
10	:	:			
:	:	:			
50	:	:			

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Calculate HRA, DA & BONUS using VLOOKUP function.

37. Display proper message and calculate difference.

	A	B	C	D	E
			Super Market		
1		Pur. Price	Sales Price	Message	Difference
2	Prod. Name	10000	12000		
3	Prod-A	15000	12000		
4	Prod-B	:	:		
:	:	:	:		
54	:				

Message can be 'At Profit' / 'At Loss' / 'At Cost'.

38. Consider following worksheet, display proper message and %.

	A	B	C	D	E
			Share Market		
1		Face Value	Issue Price	Message	% of issue
2	Co. Name	Per Share	Per Share		Price on FV
3		10	80		
4	Bata	:	:		
:	:	:	:		
54	:	:	:		

Message can be 'At Par' / 'At Discount' / 'At Premium'.

39. Consider following worksheet, Calculate Discount and Net amount:

	A	B	C	D	E
			Inorbit Mall		
1					
2	Name	Pur. Date	Pur. Amt.	Discount	Net Amt
3	:	:	:		
:	:	:	:		
54	:	:	:		

Discount depends on day of the week; on Thursday discount is 15%, on Saturday and Sunday Discount is 10% otherwise discount is 4%.

40. Name of the employees is typed in cell A1 to cell A50. First row is used for column heading. Display first character of name, last 3 characters of name, 3rd & 4th character of name and length of name in column B, C, D & E respectively. Give column headings.

41. Name of the salesman and his sales are entered in cell A1 to cell B20. First row contains headings. Calculate commission.

Sales	Commission
<=10000	5%
>10000 but <=25000	10%
>25000	15%

42. Calculate custom duty for the following:

	A	B	C
1	NAME	DATE	GOODS VALUE
2	Ajay Save	13-Dec-2012	
:			3900
:			
51			

A typical customs regulation has the following policy of collecting customs duty. Any passenger coming from any foreign country is allowed to bring goods worth ₹ 1,250 free of duty. For the next ₹ 1,000, the duty charged is 170%, and for the excess amount duty is 240%.

43.

	A	B	C
1		F.Y.B.Sc.	
2	NAME	Physics	Maths
3	Suhas Shinde	70	68
:	:	:	:
64	:	:	:

The students have to appear for two subjects Physics and Mathematics. If a student gets 40 or more marks in both the subjects then result is 'Pass'. If he fails in Physics but gets 60 or more marks in Mathematics then result is 'ATKT-Physics'. If he fails in Mathematics but gets 55 or more marks in Physics, then result is 'ATKT-Maths'. Otherwise, result is 'Fail'. Find result for the above worksheet. Also find number of students in each category of result.

44. Calculate average of marks, result and grade in column D, E and F respectively. Name of 10 students is typed in cell A2 to A11 and their marks in two subjects are typed in cell B2 to C11. First row contains headings. A student is declared as PASS, if he gets 35 or more in each subject otherwise FAIL. For a FAIL student grade is 'IV' and for a PASS student grade is calculated as follows.

Average	Grade
Average >=60	I
Average <60 but >=45	II
Average <45 but >=35	III

Answers:

SORT AND FILTER

SORTING DATA

Command: Data Tab → Sort (OR) Home Tab → Sort & Filter → Custom Sort

ZA/AZ Sort	AZ Sort & Filter ▾	⬍ Custom Sort...
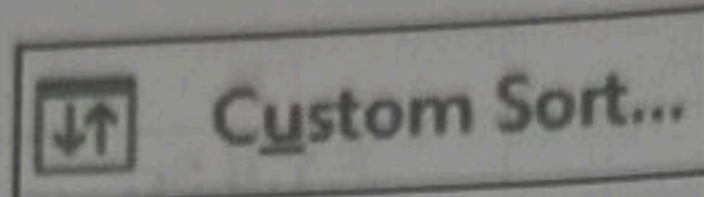
Use: This option is used to sort current range of data in ascending or descending order.

Dialog Box:

Sort						? ✕
⁺ᴢ Add Level	✕ Delete Level	🖺 Copy Level	▲ ▼	Options...		☑ My data has headers
Column			**Sort On**		**Order**	
Sort by		⌄	Cell Values	⌄	A to Z	⌄
					OK	Cancel
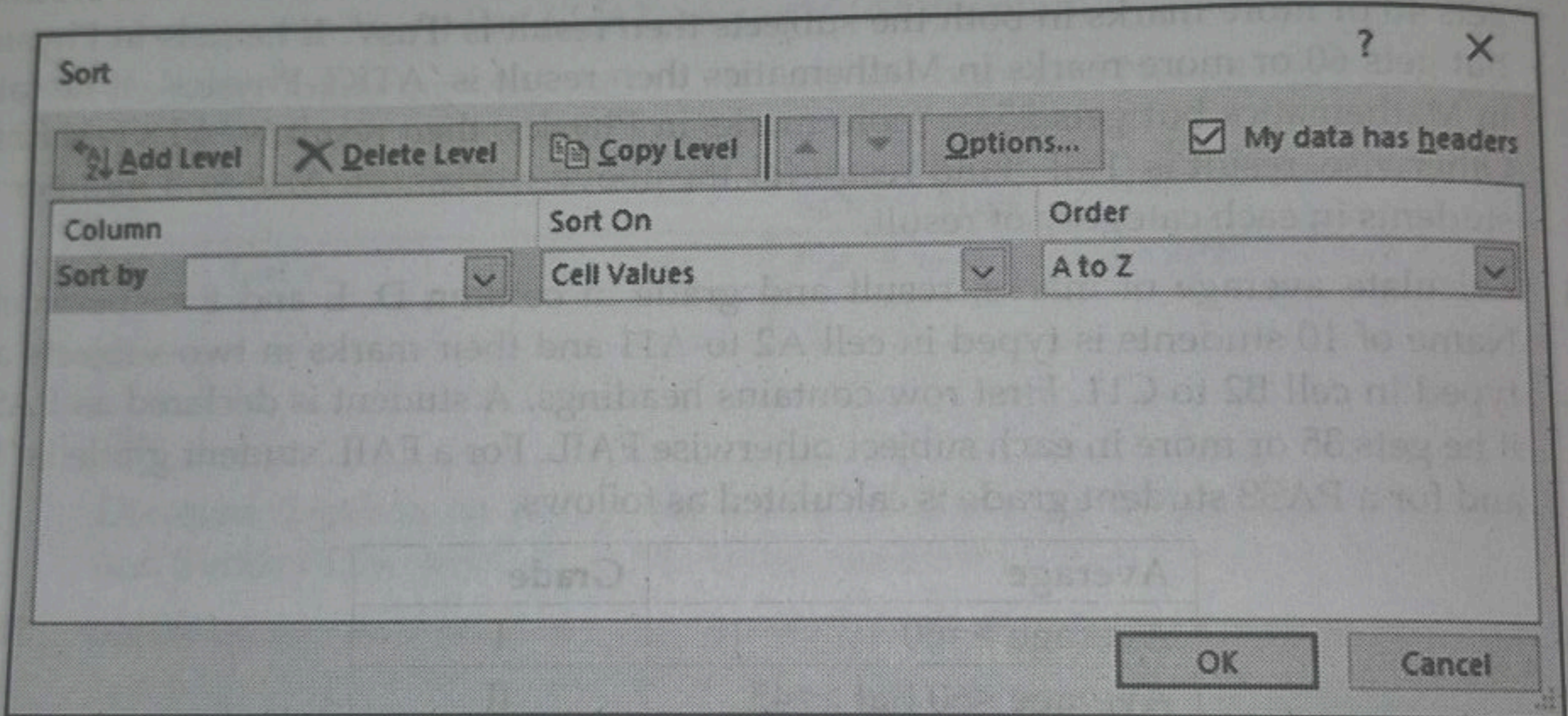
HOW TO SORT THE DATA?

Click anywhere in a data (OR) Select an entire data.

Click at **Data Tab→ Sort** (OR) Click at **Home Tab→ Sort & Filter → Custom Sort**

- Select 'My data has headers' or deselect 'My data has headers' as the case may be.

- Click at the Drop-down arrow of 'Sort by', select sorting key.

- Click at Drop-down arrow of Order select A to Z/ Z to A in case of Text column (or) select Smallest to Largest/ Largest to Smallest in case of Numeric column (or) select Oldest to Newest/ Newest to Oldest in case of Date column.

Sort and Filter

- If required, click at Add Level, this will add a row of 'Then by'.
- Click at the Drop-down arrow of 'Then by', select sorting key
- Click at Drop-down arrow of Order select A to Z/ Z to A in case of Text column (or) select Smallest to Largest/ Largest to Smallest in case of Numeric column (or) select Oldest to Newest/ Newest to Oldest in case of Date column. [Repeat these 3 steps as long as you want]
- Click at Ok button.

TIPS:

(a) If the first row of your data does not contain headings, then you should deselect My data has headers then 'Sort by' key should be column position i.e. Column A or Column B etc.

(b) Sorting is possible maximum up to 64 fields.

(c) While sorting if two or more values are exactly the same then first come first principal is adopted.

(d) Whenever you click at Add Level button, Excel will add one 'Then by' line in the dialog box as follows:

Then by		Values		A to Z	
	∨		∨		∨

(e) If required 'Then By' can be removed by clicking at Delete Level button; at a time one 'Then by' is removed.

Note: For sorting data should be available in columnar format, with or without column headings.

Consider the following worksheet and sort the data in the descending order of Marks.

	A	B	C
1	NAME	SURNAME	MARKS
2	SANJAY	D'SOUZA	451
3	GIRISH	PATIL	462
4	SUDHIR	D'SOUZA	453
5	POOJA	SHAH	489
6	ARCHANA	SHAH	450
7	NILAM	KAMAT	486
8	AMITA	KAMAT	455
9	YOGESH	PATIL	466

To sort the data in the descending order of Marks

Click anywhere in data (OR you can select entire data)

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Click at Data Tab → Sort (OR) Click at Home Tab → Sort & Filter → Custom

Sort

- Select My data has headers; if not selected.
- Click at Drop-down arrow of 'Sort by', select MARKS
- Click at Drop-down arrow of Order and select Largest to Smallest (Descending).
- Click at Ok button.

Sort the above data in the Alphabetical order of Surname and within Surname in the alphabetical order of Name.
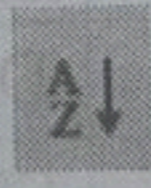
To sort the data

Click anywhere in data (OR you can select entire data)

Click at Data Tab → Sort (OR) Click at Home Tab → Sort & Filter → Custom

Sort

- Select My data has headers; if not selected.
- Click at Drop-down arrow of 'Sort by', select SURNAME
- Click at Drop-down arrow of Order and select A to Z (Ascending).
- Click at Add Level button to add 'Then by'.
- Click at Drop-down arrow of 'Then by', select NAME
- Click at Drop-down arrow of Order and select A to Z (Ascending).

- Click at Ok button.

QUICK SORT

If you want to sort the data on **only single column** then you can use quick sort.

How to perform Quick Sort

1. Click on a data cell, from the column on which you want to sort the data.

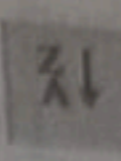2. Click at **Data Tab → Ascending** ⬇ icon (or) ⬇ **Descending icon (OR)**

   Click at **Home Tab → Sort & Filter → Ascending Icon / Descending Icon**

Consider the following worksheet. Sort the data in the descending order of Marks.

	A	B	C
1	NAME	SURNAME	MARKS
2	SANJAY	D'SOUZA	451
3	GIRISH	PATIL	462
4	SUDHIR	D'SOUZA	453

Sort and Filter

5	POOJA	SHAH	
6	ARCHANA	SHAH	489
7	NILAM	KAMAT	450
8	AMITA	KAMAT	486
9	YOGESH	PATIL	455
			466

To sort the data in the descending order of Marks

1. Click anywhere on the data or ⇅ heading of Marks column. (C1 to C9).

2. Click at Data Tab → Descending Icon

DATA FILTER

INTRODUCTION:

1. Filter means getting only those records which are satisfying a given condition.

2. Filtering is possible only if the data is available in a list i.e. the data is available in columnar form.

3. Excel provides two methods of filtering (a) Filter for simple criteria and (b) Advanced filter for complex criteria.

4. Filtering is not possible on Pivot Table Report.

5. Filter can be done only for one list in a worksheet.

6. In filter a condition is given after a command where as in advanced filter a condition is given before a command.

7. In advanced filter if you want, you can copy data to new location, which is satisfying a given condition; this is not possible with filter.

FILTER

How to perform filter

Click anywhere in the data (OR) Select entire data.

Click at **Data Tab** → Filter (OR) **Home Tab** → Sort & Filter → Filter
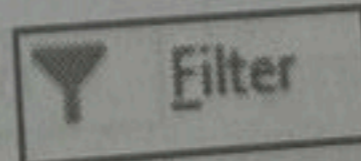
(This will display Drop-down arrow besides every heading in the data)

Click at Drop-down arrow of a field.

Click at Proper option.

Once you click at Drop-down arrow of a field you get following options:

Sort Smallest to Largest/A to Z/Oldest to Newest: To sort the data in ascending order of the Numeric/ Text/ Date field.

Sort Largest to Smallest/Z to A/Newest to Oldest: To sort the data in the descending order of the Numeric/ Text/ Date field.

Sort by Color: To perform Custom Sort. To perform sorting on multiple fields.

Clear Filter From '__ ': To display all the rows; if they are hidden. I.e. to remove the filter.

Unique Values: (Select All) to display all the records. To display only those records which are equal to the value select particular value/s.

Number Filters/ Text Filters: If you are using Drop-down Arrow of a Numeric field then you will get Number Filters and if you are using Drop-down Arrow of Text field then you will get Text Filters.

Number Filters: Number filters are – Equals, Does Not Equal, Greater Than, Greater Than Or Equal To, Less Than, Less Than Or Equal To, Between, Top 10, Above Average, Below Average, Custom Filter. (Custom Filter means condition/s will be given in the last dialog box).

Text Filters: Text Filters are Equals, Does Not Equal, Begins With, Ends With, Contains, Does Not Contain, Custom Filter. [Custom Filter is generally required for Does Not Begin With and Does Not End With] (Custom Filter means condition/s will be given in the last dialog box).

In case of Date, the Date Filters are: Equals, Before, After, Between, Today, Tomorrow, Yesterday, Next Week, This Week, Last Week, Next Month, This Month, Last Month, Next Quarter, This Quarter .....

Top 10:

To display the **top / bottom 'n'** number of records, select Top 10. With this option you can get top/bottom 'n' number of records. In the second box you have to type the value. Default value in the second box is 10.
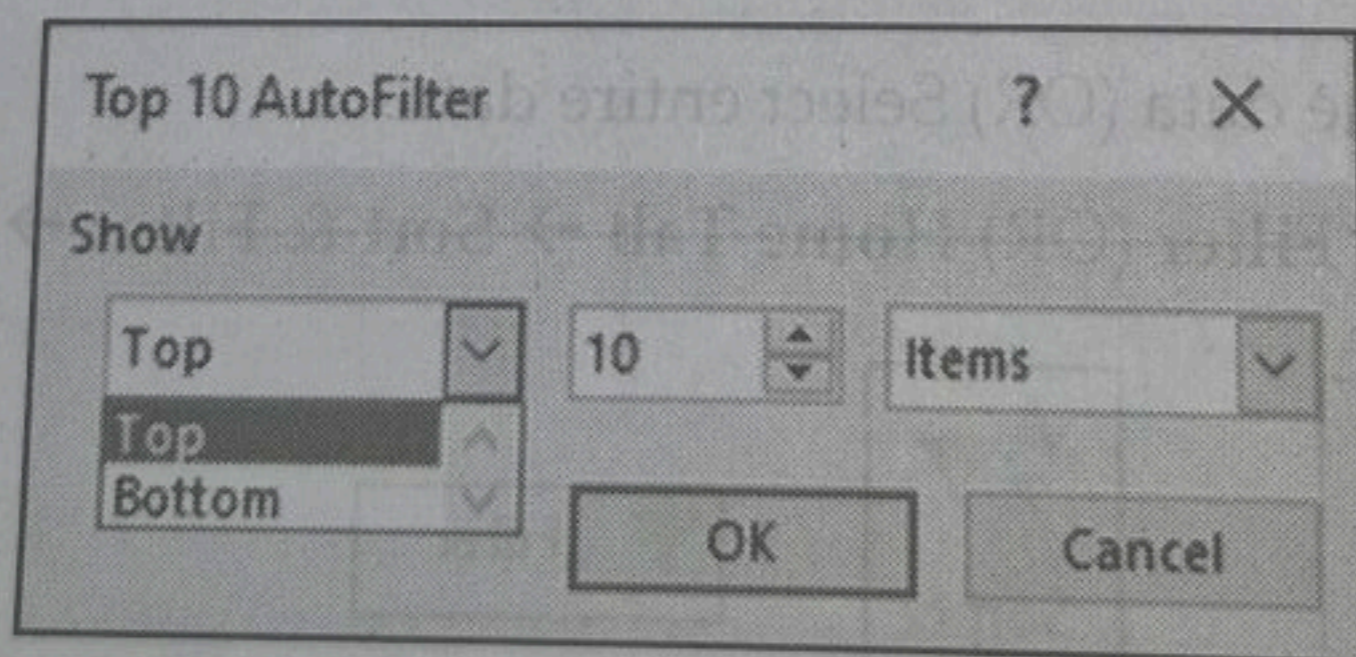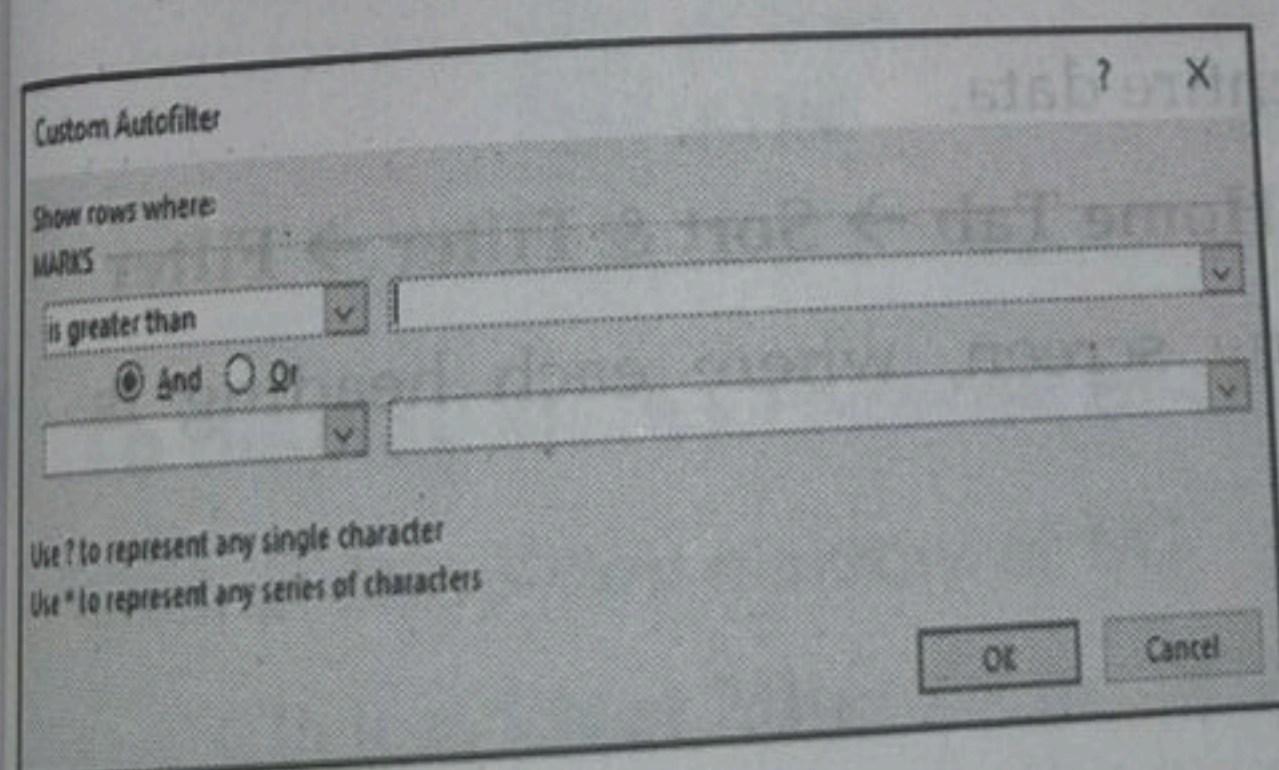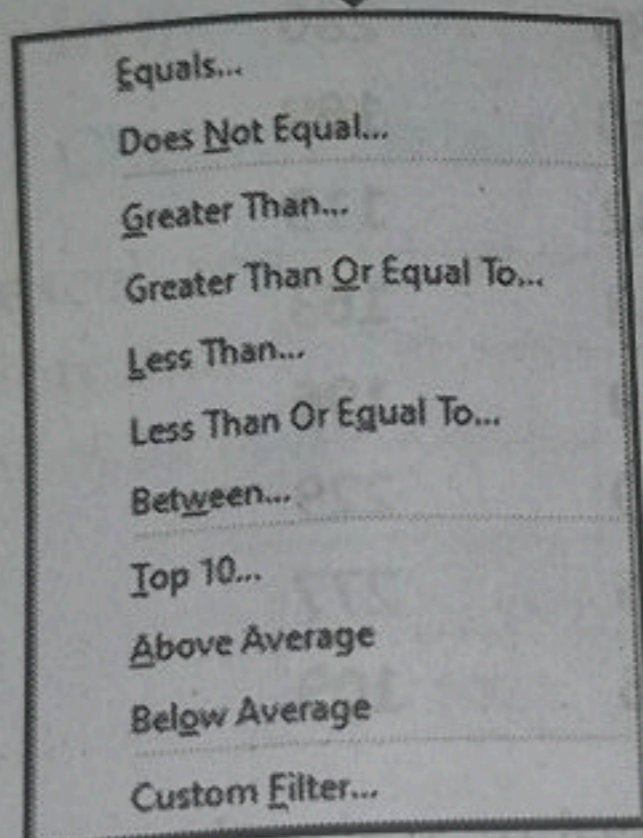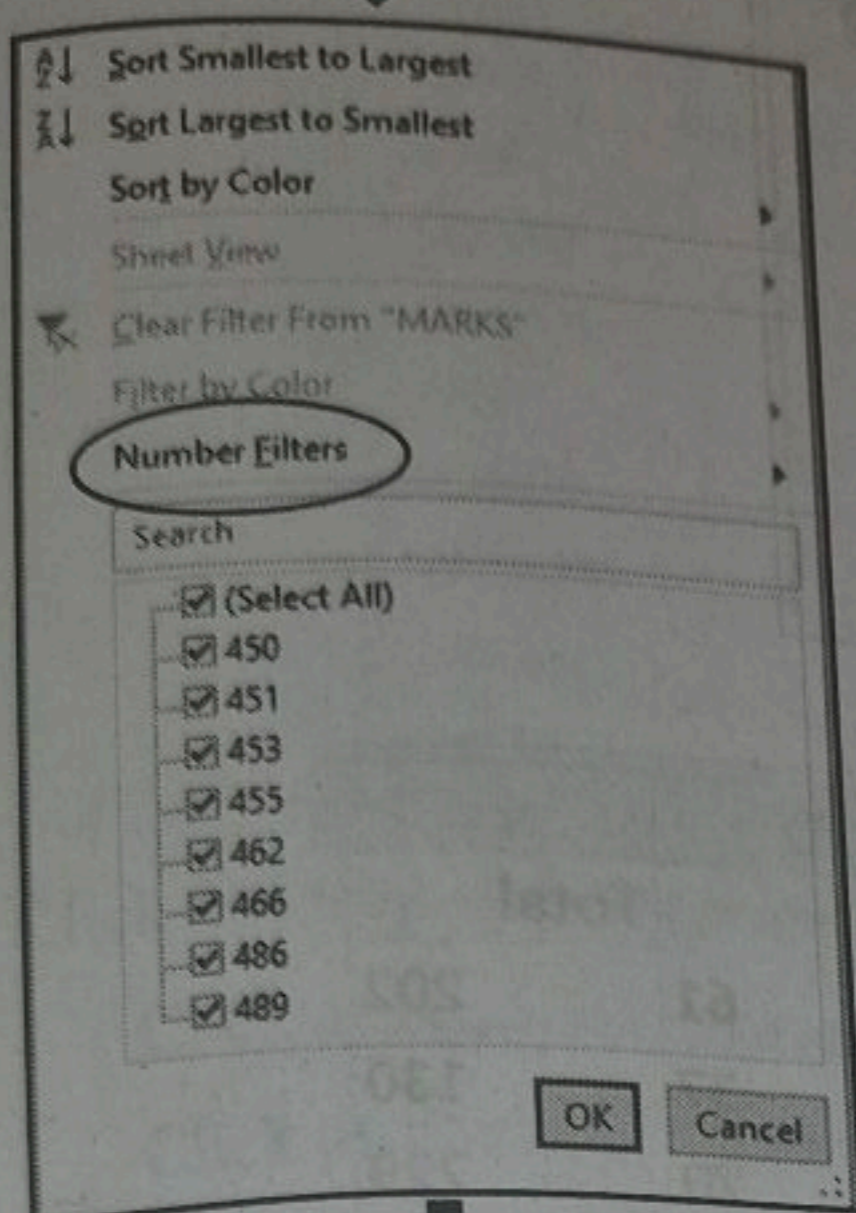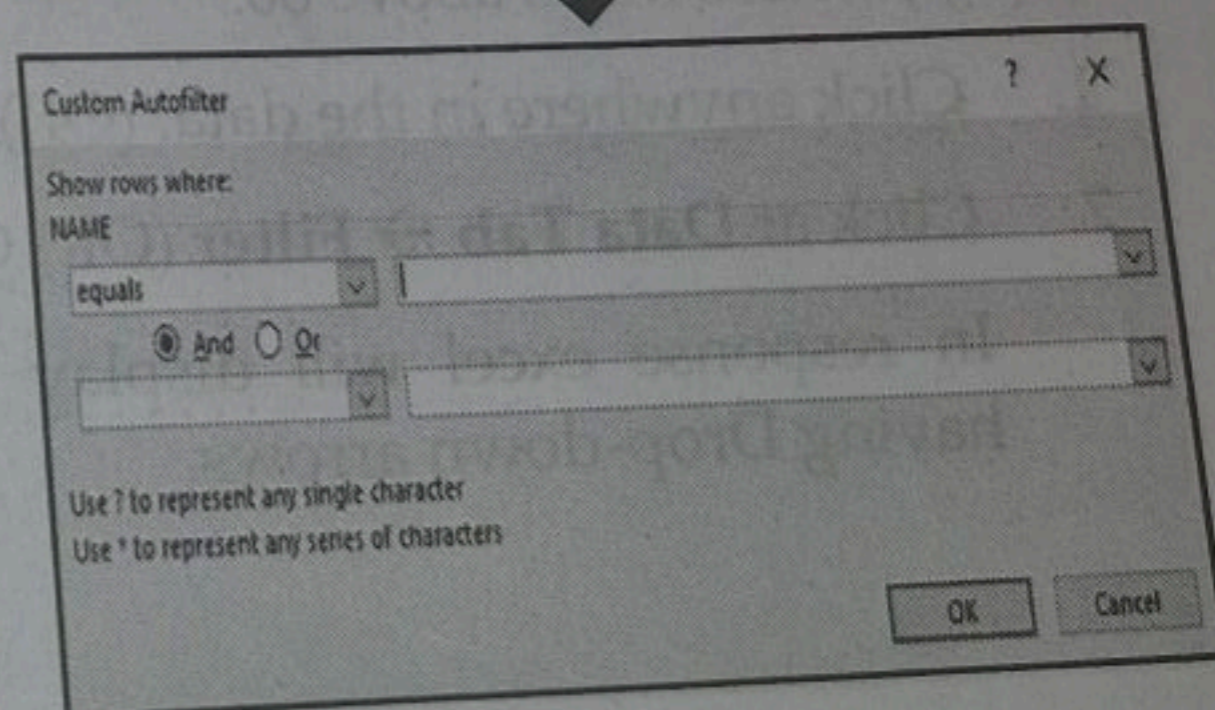
Above/Below Average:
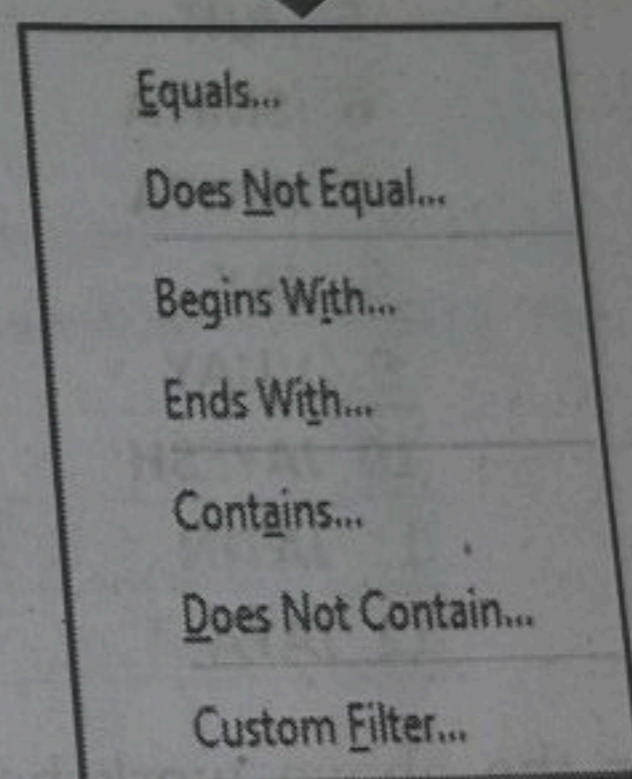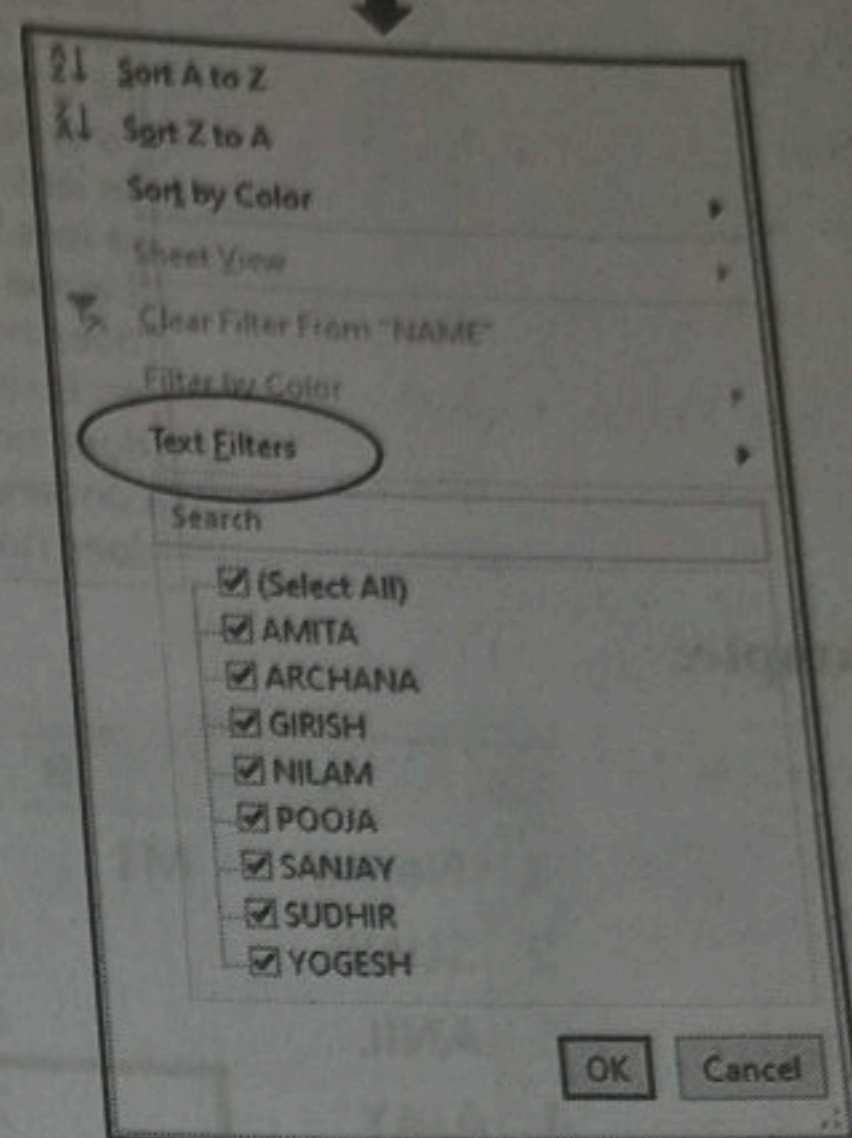
To display records which are above or below average you can use this option. Average is calculated automatically by Excel.

Sort and Filter

Following are the two cases (1) Numeric Data and (2) Text Data. Numeric data case is given on the left side and Text data case is given on the right side.
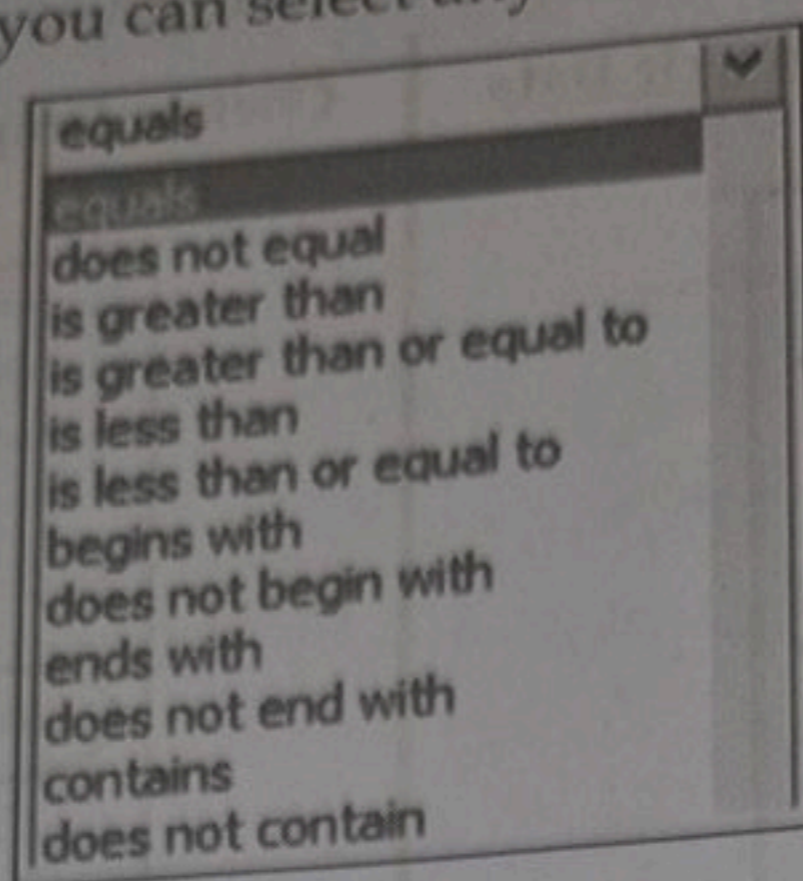
Click at Drop-down arrow of <u>Numeric Data</u>.

Click at Drop-down arrow of <u>Text Data</u>

Left side (Numeric Data):

- ↑ Sort Smallest to Largest
- ↓ Sort Largest to Smallest
- Sort by Color ▸
- Sheet View ▸
- Clear Filter From "MARKS"
- Filter by Color ▸
- (Number Filters) ▸
- Search
  - ☑ (Select All)
  - ☑ 450
  - ☑ 451
  - ☑ 453
  - ☑ 455
  - ☑ 462
  - ☑ 466
  - ☑ 486
  - ☑ 489

OK | Cancel

Equals...
Does Not Equal...
Greater Than...
Greater Than Or Equal To...
Less Than...
Less Than Or Equal To...
Between...
Top 10...
Above Average
Below Average
Custom Filter...

Custom Autofilter ? X
Show rows where:
MARKS
is greater than
● And ○ Or
Use ? to represent any single character
Use * to represent any series of characters
OK | Cancel

Right side (Text Data):

- ↑ Sort A to Z
- ↓ Sort Z to A
- Sort by Color ▸
- Sheet View ▸
- Clear Filter From "NAME"
- Filter by Color ▸
- (Text Filters) ▸
- Search
  - ☑ (Select All)
  - ☑ AMITA
  - ☑ ARCHANA
  - ☑ GIRISH
  - ☑ NILAM
  - ☑ POOJA
  - ☑ SANJAY
  - ☑ SUDHIR
  - ☑ YOGESH

OK | Cancel

Equals...
Does Not Equal...
Begins With...
Ends With...
Contains...
Does Not Contain...
Custom Filter...

Custom Autofilter ? X
Show rows where:
NAME
equals
● And ○ Or
Use ? to represent any single character
Use * to represent any series of characters
OK | Cancel

In the last dialog box, you have to type a value in the 2nd box if it is single condition.

In case of double condition on a single field, once the first condition is over then you have to select logical operator And / Or and then you have to give the 2nd condition using 3rd and 4th box.

If you click at the Drop-down arrow of 1st box or 3rd box then Excel will display 12 options as follows and you can select any one of them.

```
equals
equals
does not equal
is greater than
is greater than or equal to
is less than
is less than or equal to
begins with
does not begin with
ends with
does not end with
contains
does not contain
```

Example:

	A	B	C	D	E
					Total
1	Name	M1	M2	M3	
2	SUNIL	69	72	61	202
3	ANIL	45	48	37	130
4	AJAY	78	81	70	229
5	AJIT	97	100	89	286
6	SMITA	58	61	50	169
7	ANITA	40	43	32	115
8	JAY	56	59	48	163
9	VIJAY	67	70	59	196
10	JAYESH	78	81	70	229
11	JATIN	94	97	86	277
12	JAYA	35	38	36	109

Consider the above worksheet. Now you want to display only those records (rows) where M2 is above 80.

1. Click anywhere in the data. (OR) Select entire data.

2. Click at **Data Tab** → **Filter** (OR) Click at **Home Tab** → **Sort & Filter** → **Filter**

In response excel will display following screen, where each heading is having Drop-down arrows.

	A	B	C	D	E	
1	Name ▼	M1 ▼	M2 ▼	M3 ▼	Total ▼	
2	SUNIL	69	72	61	202	
3	ANIL	45	48	37	130	
4	AJAY	78	81	70	229	
5	AJIT	97	100	89	286	
6	SMITA	58	61	50	169	
7	ANITA	40	43	32	115	
8	JAY	56	59	48	163	
9	VIJAY	67	70	59	196	
10	JAYESH	78	81	70	229	
11	JATIN	94	97	86	277	
12	JAYA	35	38	36	109	

3. Click at **Drop-down** arrow of M2, because condition depends on M2.

- Click at **Number Filters**

- Click at **Greater Than**

- In the 2nd box type **80**

- Click at **Ok** button.

Now excel will display only those records which are satisfying the given condition and Excel will hide all the rows which are not satisfying the given condition, as given below.

	A	B	C	D	E	
1	Name ▼	M1 ▼	M2 ▼	M3 ▼	Total ▼	
4	AJAY		78	81	70	229
5	AJIT		97	100	89	286
10	JAYESH		78	81	70	229
11	JATIN		94	97	86	277
13						

To display all the records once again

Click at **Drop-down** arrow of M2

- Click at **Clear Filter From "M2"**

(OR)

Click at **Data Tab → Clear**

TO REMOVE AUTO FILTER

Click at **Data Tab → Filter** (OR) Click at **Home Tab → Sort & Filter → Filter**

It removes the Drop-down arrows, which are besides the headings.

If you want to display only those records where M3 is between 60 and 80, both inclusive then the Auto filter procedure is as follows.

1. Click anywhere in the data.

2. Click at Data Tab → Filter (Omit this step, if the list is having Drop-down arrows next to headings)

3. Click the drop-down arrow of M3

   - Click at **Number Filters**

   - Click at **Between**

   - In the 2nd box type **60**

   - Click at 4th box and type **80**

   - Click at Ok button.

Now excel will display those records which are satisfying the given condition.

TO REDISPLAY ALL THE RECORDS

Click at Data Tab → Clear   (OR) Click at Drop-down arrow of M3

- Click at Clear Filter From "M3"

To display all the records where name is ending with 'A', the procedure will be as follows.

1. Click anywhere in the data.

2. Click at Data Tab → Filter (Omit this step, if the list is having Drop-down arrows next to headings)

3. Click the drop-down arrow of Name

   - Click at **Text Filters**

   - Click at **Ends With**

   - In the 2nd box type **A**

   - Click at Ok button.

Now excel will display those records which are satisfying the given condition.

Note: Alternatively, you can select **Equals** and in the 2nd box type ***A**

TO REDISPLAY ALL THE RECORDS

Click at Data Tab → Clear   (OR) Click at Drop-down arrow of Name

- Click at Clear Filter From "Name"

To display all the records where name is not ending with 'Y', the procedure will be as follows.

1. Click anywhere in the data.

Sort and Filter

2. Click at Data Tab → Filter (Omit this step, if the list is having Drop-down arrows next to headings)

3. Click the drop-down arrow of Name

   - Click at Text Filters

   - Click at **Custom Filter**

   - Click at Drop-down arrow of 1st Box and select, **Does not End With**

   - In the 2nd box type Y

   - Click at Ok button.

Now excel will display those records which are satisfying the given condition.

Note: Alternatively, you can select **Does not Equal** and in the 2nd box type *Y

TO REDISPLAY ALL THE RECORDS

Click at Data Tab → Clear (OR) Click at Drop-down arrow of Name

- Click at Clear Filter From "Name"

If you want to display only those records where TOTAL is below 125 or above 250, then the Auto filter procedure is as follows.

1. Click anywhere in the data.

2. Click at Data Tab → Filter (Omit this step, if the list is having Drop-down arrows next to headings)

3. Click the drop-down arrow of Total

   - Click at Number Filters

   - Click at **Custom Filter**

   - Click at Drop-down arrow of 1st Box and select, **Is Less Than**

   - In the 2nd box type **125**

   - Click at logical operator Or

   - Click at Drop-down arrow of 3rd Box and select, **Is Greater Than**

   - Click at 4th box and type **250**

   - Click at Ok button.

Now excel will display those records which are satisfying the given condition.

TO REDISPLAY ALL THE RECORDS

Click at Data Tab → Clear (OR) Click at Drop-down arrow of Total

- Click at Clear Filter From "Total"

To display all the records where second character of name is 'A', the procedure will be as follows.

1. Click anywhere in the data.

2. Click at Data Tab → Filter (Omit this step, if the list is having Drop-down arrows next to headings)

3. Click the drop-down arrow of Name

   - Click at Text Filters

   - Click at **Equals**

   - In the 2nd box type ?A*

   - Click at Ok button.

Now excel will display those records which are satisfying the given condition.

TO REDISPLAY ALL THE RECORDS

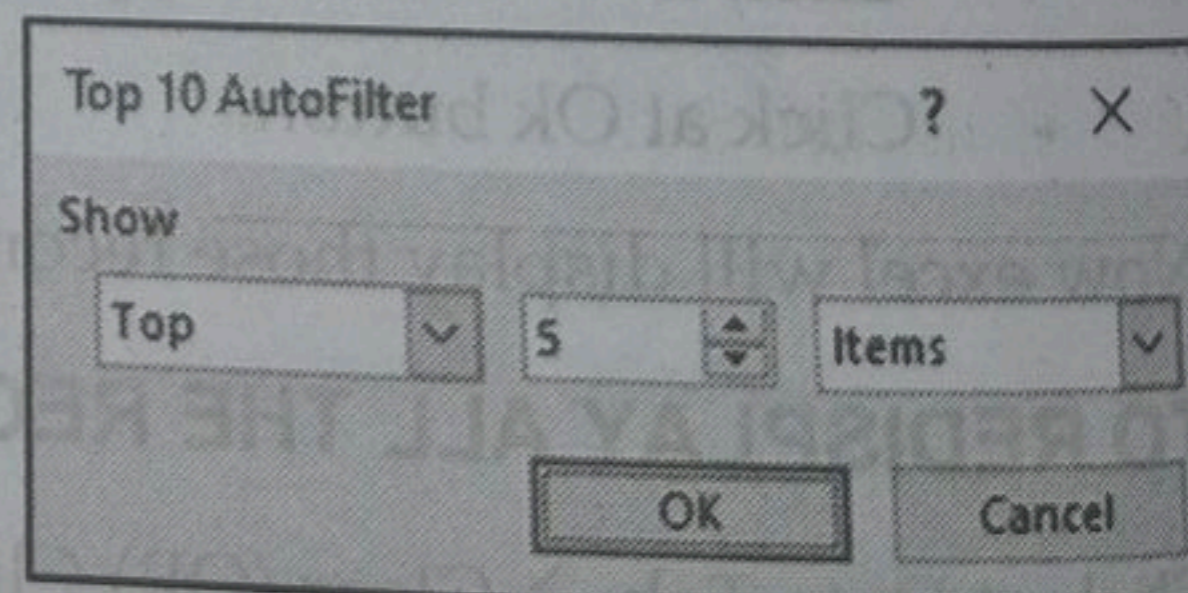Click at Data Tab → Clear   (OR) Click at Drop-down arrow of Name

- Click at Clear Filter From "Name"

Look at some more conditions: (Note: ? and * are called as wild card characters)

Condition	Operator	What to type in the 2nd box
2nd character of name is I	Equals	?I*
3rd character of name is E	Equals	??E*
2nd last character of name is A	Equals	*A?
3rd last character of name is J	Equals	*J??
2nd character of name is not I	Does Not Equal	?I*
3rd last character of name is not J	Does Not Equal	*J??
Length of name is 5 characters	Equals	?????

To display top 5 records based on total, the procedure will be as follows.

1. Click anywhere in the data.

2. Click at Data Tab → Filter (Omit this step, if the list is having Drop-down arrows next to headings)

3. Click the drop-down arrow of Total

   - Click at Number Filters

   - Click at **Top 10**

   - In the 2nd box type **5**

   - Click at Ok button.

Now excel will display top 5 records as per Total.

Sort and Filter

TO REDISPLAY ALL THE RECORDS

Click at Data Tab → Clear   (OR)

Click at Drop-down arrow of Total

-- Click at Clear Filter From "Total"

	A	B		C		D		E	
1	Name	M1		M2		M3		Total	
2	SUNIL			69		72		61	202
4	AJAY			78		81		70	229
5	AJIT			97		100		89	286
10	JAYESH			78		81		70	229
11	JATIN			94		97		86	277
13									

To display bottom 3 records of M1, the procedure will be as follows.

1. Click anywhere in the data.

2. Click at Data Tab → Filter

3. Click the drop-down arrow of M1

   - Click at Number Filters

   - Click at **Top 10**

   - Click at the Drop-down arrow of 1st box and select **Bottom**

   - In the 2nd box type **3**

   - Click at **Ok** button.

Top 10 AutoFilter   ?   ×

Show

Bottom   ∨ 3 ⇕ Items ∨

                    OK   Cancel

Now excel will display bottom 3 records of M1 as follows:

	A	B	C	D	E	
1	Name	M1	M2	M3	Total	
3	ANIL	45	48	37	130	
7	ANITA	40	43	32	115	
12	JAYA	35	38	36	109	

TO REDISPLAY ALL THE RECORDS

Click at Data Tab → Clear   (OR) Click at Drop-down arrow of M1

-   Click at Clear Filter From "M1"

To display records where M1 is above average, the procedure will be as follows.

1. Click anywhere in the data.

2. Click at Data Tab → Filter (Omit this step, if the list is having Drop-dow arrows next to headings)

3. Click the drop-down arrow of M1

   - Click at Number Filters

   - Click at **Above Average**

Now excel will display records where M1 is above average.

TO REDISPLAY ALL THE RECORDS

Click at Data Tab → Clear (OR) Click at Drop-down arrow of M1

- Click at Clear Filter From "M1"

To display records where Total is below average, the procedure will be as follows.

1. Click anywhere in the data.

2. Click at Data Tab → Filter (Omit this step, if the list is having Drop-down arrows next to headings)

3. Click the drop-down arrow of Total

    - Click at Number Filters

    - Click at **Below Average**

Now excel will display records where Total is below average.

TO REDISPLAY ALL THE RECORDS

Click at Data Tab → Clear (OR) Click at Drop-down arrow of Total

- Click at Clear Filter From "Total"

Sort the records in the descending order of Total, the procedure will be as follows.

1. Click anywhere in the data.

2. Click at Data Tab → Filter (Omit this step, if the list is having Drop-down arrows next to headings)

3. Click the drop-down arrow of Total

    - Click at Sort Largest to Smallest

Now excel will display the records in the descending order of Totals.

Sort the records in the alphabetical order of Name, the procedure will be as follows.

1. Click anywhere in the data.

2. Click at Data Tab → Filter (Omit this step, if the list is having Drop-down arrows next to headings)

3. Click the drop-down arrow of Name

    - Click at Sort A to Z

Now excel will display the records in the alphabetical order of Names.

Sort the records as per Department and within department in the descending order of Salary, the procedure will be as follows.

1. Click anywhere in the data.

Sort and Filter

2. Click at Data Tab → Filter (Omit this step, if the list is having Drop-down arrows next to headings)

3. Click the drop-down arrow of Department

   - Click at Sort by Color
   - Click at Custom Sort
   - Click at the Drop-down arrow of Sort by, Select Department
   - Click at the Drop-down arrow of Order, Select A to Z
   - Click at Add Level Button
   - Click at the Drop-down arrow of Then by, Select Salary
   - Click at the Drop-down arrow of Order, Select Largest to Smallest
   - Click at Ok Button

Now excel will display the records in the alphabetical order of Department and within department in the descending order of Salary.

ADVANCED FILTER

In advanced filter you have to specify the criteria (condition) at any blank cells before you click at Data Tab → Advanced. While specifying a condition in the first row you have to specify the headings and then in the next row specify the condition.

Examples of Criteria in the Advanced Filter

1. Age equals to 20.

AGE
20

2. Name is starting with 'S'.

NAME
S*

3. Name is not starting with 'S'.

NAME
<>S*

4. Name equal to AMIT.

NAME
AMIT

5. Salary greater than 5000.

SALARY
> 5000

6. Salary less than or equal to 5000.

SALARY
< = 5000

7. Name starting with 'S' or 2nd character of Name is 'A'.

NAME
S*
?A*

8. Salary less than or equal to 5000 or greater than 5700.

SALARY
< = 5000
> 5700

9. Age equal to 20 and Salary greater than 5000.

AGE	SALARY
20	> 5000

10. Age equal to 20 or Salary greater than 5000.

AGE	SALARY
20	
	> 5000

11. Age equal to 20 or Salary greater than 5000 or Name is starting with S.

AGE	SALARY	NAME
20		
	> 5000	
		S*

12. Age equal to 20 and Salary greater than 5000 and Name is starting with S.

AGE	SALARY	NAME
20	> 5000	S*

Note: While typing the complex condition for Advanced Filter, headings are always typed in the Same Row (i.e. in one line). In case of 'AND' the conditions are also typed in same row (i.e. in one line) but just below the headings. In case of 'OR' the conditions are typed diagonally (i.e. like steps).
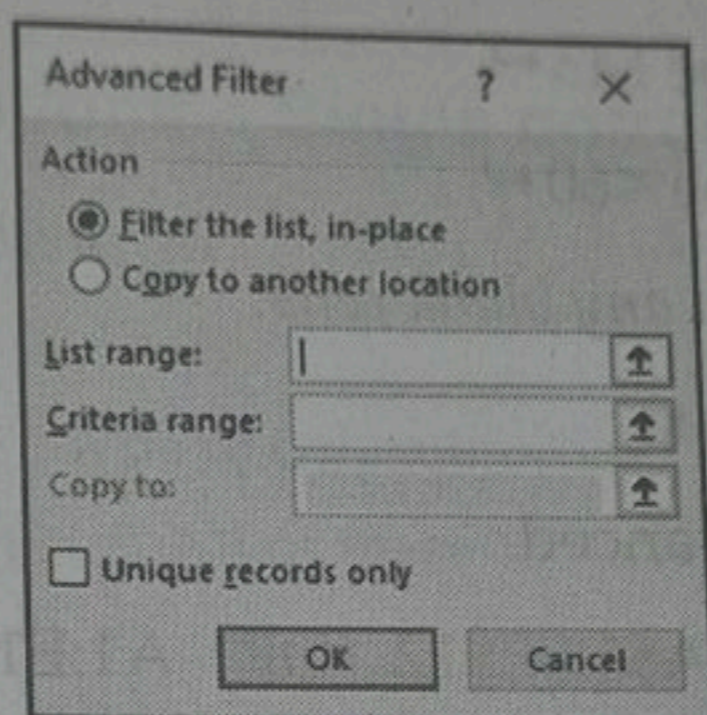
How to perform Advanced Filter

At any blank cells type the condition as explained earlier

Click anywhere in the data (OR) Select entire data.

Click at Data Tab → Advanced

- Select Proper Action.
- Specify List range (Data Range)
- Specify Criteria range (Condition Range)
- Specify Copy to location (if required)
- Click at Ok Button

Dialog box of Advanced Filter:

```
Advanced Filter          ?    ×

Action
  ⦿ Filter the list, in-place
  ○ Copy to another location
List range:         |              ↥
Criteria range:                    ↥
Copy to:                           ↥
  ☐ Unique records only

       OK            Cancel
```

Example- 1:

Perform advanced filter on above data. (Data is typed in cell A1 to E12). Condition is marks in each subject are above 75.

1. Click at cell G1 and type M1 ↵

2. Click at cell G2 and type >75 ↵

3. Click at cell H1 and type M2 ↵

4. Click at cell H2 and type >75 ↵

5. Click at cell I1 and type M3 ↵

6. Click at cell I2 and type >75 ↵

Note: *Condition can be typed in any blank cells.*

7. Click anywhere in the data.

8. Click at Data Tab → Advanced

- Type List range as $A$1:$E$12 (OR) A1:E12
- Type Criteria range as Sheet1!$G$1:$I$2 (OR) G1:I2
- Click at Ok button.

Now Excel will display only those records which are satisfying a given condition and it will hide all the records which are not satisfying a given condition.

Note: List range means Data range and Criteria range means Condition range.

TO REDISPLAY ALL THE RECORDS.

1. Click at Data Tab → Clear

Example- 2:

Perform advanced filter on above data. (Data is typed in cell A1 to E12). Condition is marks in any subject are below 60.

1. Click at cell A15 and type M1 ↵
2. Click at cell A16 and type <60 ↵
3. Click at cell B15 and type M2 ↵
4. Click at cell B17 and type <60 ↵
5. Click at cell C15 and type M3 ↵
6. Click at cell C18 and type <60 ↵

Note: *Condition can be typed in any blank cells.*

7. Click anywhere in the data.
8. Click at Data Tab → Advanced.

    -   Type List range as $A$1:$E$12 (OR) A1:E12
    -   Type Criteria range as Sheet1!$A$15:$C$18 (OR) A15:C18
    -   Click at Ok button.

Now Excel will display only those records which are satisfying a given condition and it will hide all the records which are not satisfying a given condition.

TO REDISPLAY ALL THE RECORDS.

1. Click at Data Tab → Clear

If you want to copy data to other location, which is satisfying a given condition; then you should click at **Copy to another location** in the Advanced filter dialog box. And then type the cell address at **Copy to**.

Note: If you click at **Unique records only** check box, then excel will ignore duplicate records i.e. duplicate records will appear only once.

Example-3 :

Name of employee, Age, Dept. and Salary are typed in a worksheet in cell A1 to cell D51. First row contains column headings. From this data copy the records of SALES department to cell J1 onwards.

1. Click at cell F1 and type DEPT. ↵
2. Click at cell F2 and type SALES ↵

Note: *Condition can be typed in any blank cells.*

Sort and Filter

3. Click anywhere in the data.
4. Click at Data Tab → Advanced.

- Select Action as Copy to another location
- Type List range as \$A\$1:\$D\$51 (OR) A1:D51
- Type Criteria range as Sheet1!\$F\$1:\$F\$2 (OR) F1:F2
- Type Copy to location as J1
- Click at Ok button.

Now Excel will copy the records which are satisfying a given condition to cell J1 onwards; the original list will remain as it is. (No Hiding of records).

EXERCISE

A. Multiple Choice Questions – Single correct answer :

1. Sorting is possible maximum up to _____ level.
   (a) 16 (b) 32 (c) 64 (d) None of These

2. Sorting is possible on _____ type of columnar data.
   (a) Numeric (b) Text (c) Date (d) All of these

3. For Sorting, data should be available in _____ format.
   (a) Horizontal (b) Vertical (c) Any (d) No such restrictions

4. In case of Filter, wild card character/s is/are _____.
   (a) ? (b) % (c) * (d) a & c

5. For complex criteria we use _____ filter.
   (a) Custom (b) Advanced (c) Complex (d) None of These

6. Filter is used to _____ the records which are satisfying the given condition.
   (a) Hide (b) Delete (c) Display (d) None of These

B. State whether the following statement are True/False :

1. While sorting if two or more values in a sorting column are exactly the same then duplicate values are omitted.

2. While sorting if two or more values in a sorting column are exactly the same then first come first principle is adopted.

3. Quick sort can be used if you want to sort on a single column.

4. You cannot sort on a date column.

5. For arranging the data in Ascending or Descending order you require Sort.

6. Sort option is available under Home Tab as well as Data Tab.

7. You can sort the data through Filter option also.

8. Filter is also called as Advanced Filter.

9. Quick sort will display a dialog box.

10. Without column headings, sorting is not possible.

11. Filter will hide those records which are satisfying a given condition.

C. Practical Questions :

1. Consider the following worksheet:

4	A	B	C	D
1	NAME	AGE	DEPT	SALARY
2	SUDHIR	23	ADMN	12000
3	SKY	25	A/C	13000
4	SANJAY	28	PUR	15000
5	ALISHA	22	A/C	14000
6	TANIA	22	PUR	13500
7	JESSE	23	ADMN	15500
8	SANCIA	25	ADMN	13000
9	SHANIZA	24	SALES	12000
10	MUSCAN	28	PUR	14000
11	DEEP	22	PUR	15500
12	MANAN	28	SALES	12000

(a) Arrange the data in alphabetical order of NAME.

(b) Arrange the data in the descending order of SALARY.

(c) Arrange the data in the ascending order of AGE.

(d) Arrange the data as per DEPT and within DEPT as per SALARY.

(e) Arrange the data as per DEPT and within DEPT in the Descending order of SALARY.

(f) Arrange the data as per descending order of AGE and within age in the descending order of SALARY.

(g) Arrange the data in such a way that oldest employees record is displayed first so on, the youngest employees record is displayed at the end.

(h) Arrange the records as per Department, within Department as per Age and within Age as per Salary.

(i) Display only those rows where Department is 'ADMN'

(j) Display only those rows where Department is not 'ADMN'

(k) Display only those rows where Salary is 12,000.

(l) Display only those rows where Salary is below average Salary.

(m) Display only those rows where Salary is more than 13,000 but less than 15,500.

(n) Display only those rows where Salary is more than 13,500.

(o) Display only those rows where age is up to 25.

(p) Display only those rows where name contains alphabet 'I'

(q) Display only those rows where name is starting with alphabet 'S'

(r) Display only those rows where name is ending with alphabet 'A'

(s) Display only those rows where 2nd character of name is 'E'

(t) Display only those rows where 2nd last character of name is 'I'

(u) Display only those rows where 2nd character of name is **not** 'A'

(v) Display only those rows where name is having exact 6 characters.

(w) Display only those rows where Salary is 13,500 or less.

(x) Display salary-wise top 5 employees.

(y) Display records of 3 youngest employees.

(z) Display records where name is of 6 characters and 3rd character of name is 'N'.

Sort and Filter

2. Consider the following worksheet:

(a) Display the rows where Name is starting with 'S' and age is above 24.

(b) Display the rows where Name is starting with 'S' or age is above 24.

(c) Display the rows where Department is 'ADMN' or 'PUR'

(d) Display the records where age is either 24 or 28.

(e) Display the records where Age is above 24 and salary is below 16,000.

(f) Display the records where Name is starting with S and Salary is below 15,000.

(g) Display rows where age is 22 and Salary is less than 15,000 and Name is ending with A.

(h) Display rows where age is 22 or Salary is less than 15,000 or Name is ending with A.

D
SALARY
12000
13000
15000
14000
13500
15500
13000
12000
14000
15500
12000

	A	B	C	D
1	NAME	AGE	DEPT	SALARY
2	SUDHIR	23	ADMN	12000
3	SKY	25	A/C	13000
4	SANJAY	28	PUR	15000
5	ALISHA	22	A/C	14000
6	TANIA	22	PUR	13500
7	JESSE	23	ADMN	15500
8	SANCIA	25	ADMN	13000
9	SHANIZA	24	SALES	12000
10	MUSCAN	28	PUR	14000
11	DEEP	22	PUR	15500
12	MANAN	28	SALES	12000

3. Consider the following worksheet:

(a) Display records where marks in English are above 69.

(b) Display records where marks in each subject is above 69.

(c) Display records where marks in any subject is above 72.

(d) Display records where marks in English and Science each above 72.

(e) Display records where marks in Maths and Science each above 80.

(f) Display records where marks in Maths are below 80.

(h) Hide the records where Name is starting with 'M'

	A	B	C	D
1	NAME	English	Maths	Science
2	SUDHIR	50	70	69
3	SKY	60	99	92
4	SANJAY	70	89	87
5	ALISHA	55	80	88
6	TANIA	64	78	65
7	JESSE	59	87	75
8	SANCIA	90	94	72
9	SHANIZA	68	80	66
10	MUSCAN	70	70	69
11	DEEP	45	80	66
12	MANAN	68	80	62

Answers:

MCQs : (1) – (c), (2 – (d), (3 – (b), (4 – (d), (5 – (b), (6) – (c)

True: 2, 3, 5, 6, 7

False: 1, 4, 8, 9, 10, 11

SCENARIOS AND PIVOT TABLES

SCENARIO MANAGER

Scenario Manager is a powerful, flexible and useful tool used for what-if analysis. It allows users to create and compare different sets of values for formulas in a worksheet. By using Scenario Manager, you can create multiple scenarios where each scenario represents a different set of inputs, and then switch between these scenarios to see how changes in the inputs affect the outcomes. This is especially valuable for decision-making in finance, project management, and business forecasting.

Important Features of Scenario Manager:

1. **Multiple Scenarios:** You can create different scenarios for the same data set. For example, you could have scenarios for best case, worst case, and most likely case.

2. **Comparison of Scenarios:** After creating multiple scenarios, you can compare them side by side to see how changes in variables affect the results.

3. **Scenario Summary Reports:** Excel can generate a scenario summary report which shows all the scenarios and their outcomes in one table.

STEPS FOR SCENARIO:

1. **Set up your worksheet:**

    - Ensure that your Excel worksheet is created with a set of input values and a formula dependent on those inputs.

2. **Scenario Manager:**

    - On the Data Tab → What-If Analysis → Scenario Manager.

3. Create a new scenario:

    - Click at Add Button in the Scenario Manager dialog box.

    - In the Scenario Name box, enter a suitable name for the scenario.

    - In the Changing Cells box, enter the references of the cells whose values will change for the scenario. You can select multiple cells. (The number of changing cells for a Scenario is limited to 32.)

    - Click at OK Button.

4. Enter values for the scenario:

- Enter the new values for the cells you want to change under this scenario.

- Click at OK Button.

5. Repeat for other scenarios:

- Create additional scenarios by clicking Add and entering different values for the same changing cells or for different changing cells.

6. View or Switch between Scenarios:

- Select a scenario from the Scenario Manager list and click Show to apply it to the worksheet. Excel will instantly update the worksheet based on the selected scenario's values.

7. Generate a Scenario Summary Report:

- Click Summary in the Scenario Manager.

- In the Scenario Summary dialog box, select the result cells that depend on the changing cells. Excel will then create a report showing all scenarios side by side, including the outcomes for each scenario.

Let us take one simple example for Profit Calculation using Scenario Manager.

The attached worksheet is showing profit for the month of January. Sales is entered in cell B1, Material Cost till Sales Cost is entered in cell B3 to B7. In cell B8, Total is calculated as sum of all cost, from Material Cost till Sales Cost. In cell B10, Profit is calculated as difference between Sales and Total Cost.

	A	B
1	Sales	100000
2	Expenses	
3	Material Cost	30000
4	Labour Cost	20000
5	Factory Cost	10000
6	Office Cost	5000
7	Sales Cost	8000
8	Total	73000
9		
10	Profit	27000
11		

In the month of February, it is expected that Material Cost, Factory Cost and Sales Cost will be 33000, 11000 and 7000 respectively. Other amounts will be same as January.

In the month of March, it is expected that Material Cost, Factory Cost and Sales Cost will be 25000, 6000 and 9000 respectively. Other amounts will be same as January.

In the month of April, it is expected that Material Cost, Factory Cost and Sales Cost will be 32000, 13000 and 8000 respectively. Other amounts will be same as January.

Create Scenarios for the month of February, March and April. Also show summary report showing Sales, Total Cost and Profit.

Solution:

1. Create the above worksheet. In cell B8 type a formula as =SUM(B3:B7), in cell B10 type a formula as =B1-B8. In all other cell type, the respective values.

2. Click at Data Tab → What-If Analysis → Scenario Manager.

3. Click at Add Button.

Type Scenario Name as **Feb**

Type Changing cell as **B3, B5, B7**

Click at **Ok** Button.

4. Type Changing Values as **33000, 11000, 7000** respectively

Click at **Ok** Button

(With this first Scenario is created; now let us create the second Scenario)

5. Click at Add Button.

Type Scenario Name as **Mar**

Type Changing cell as **B3, B5, B7**

Click at **Ok** Button.

6. Type Changing Values as **25000, 6000, 9000** respectively

Click at **Ok** Button

(With this Second Scenario is created; now let us create the third Scenario)
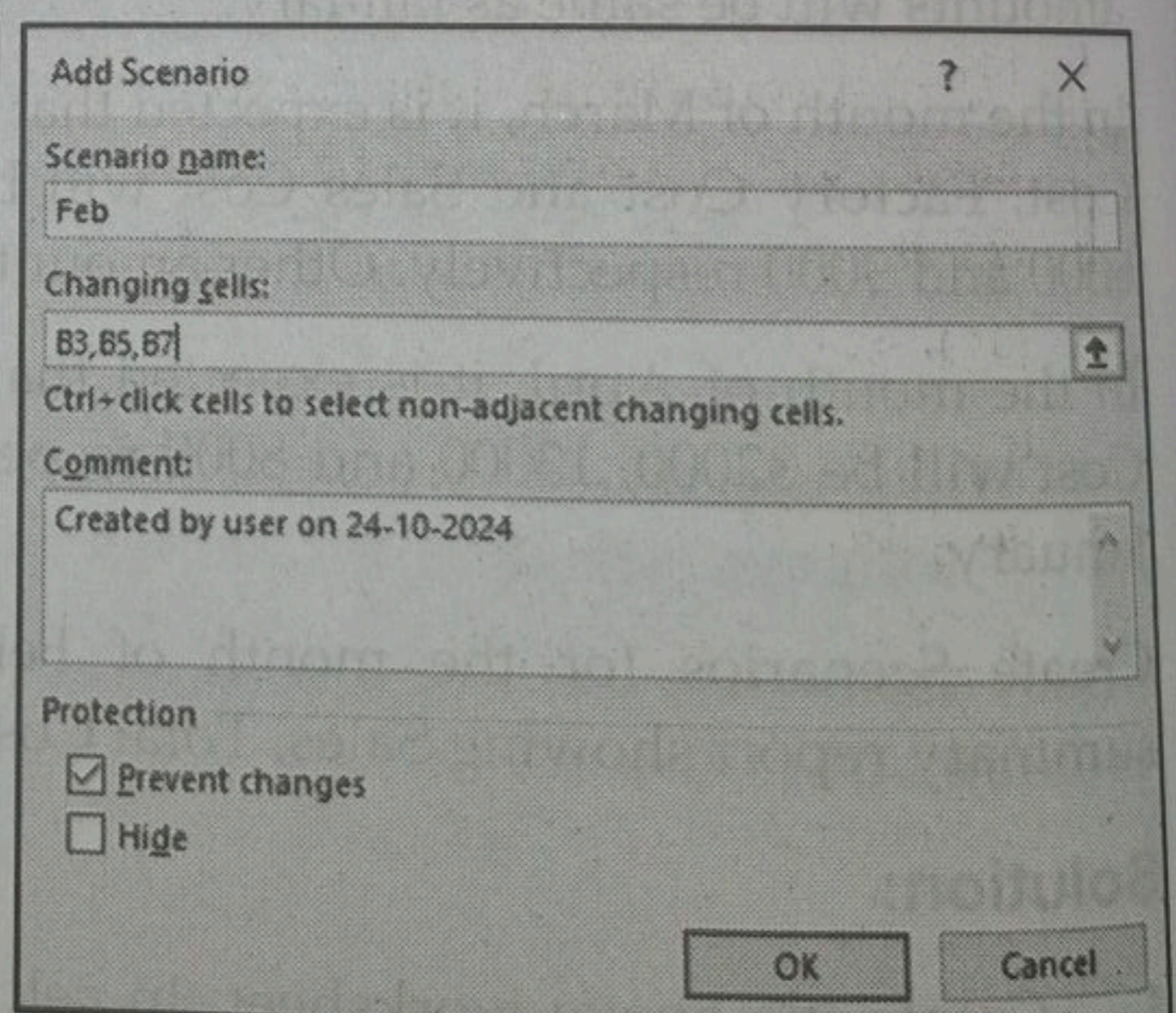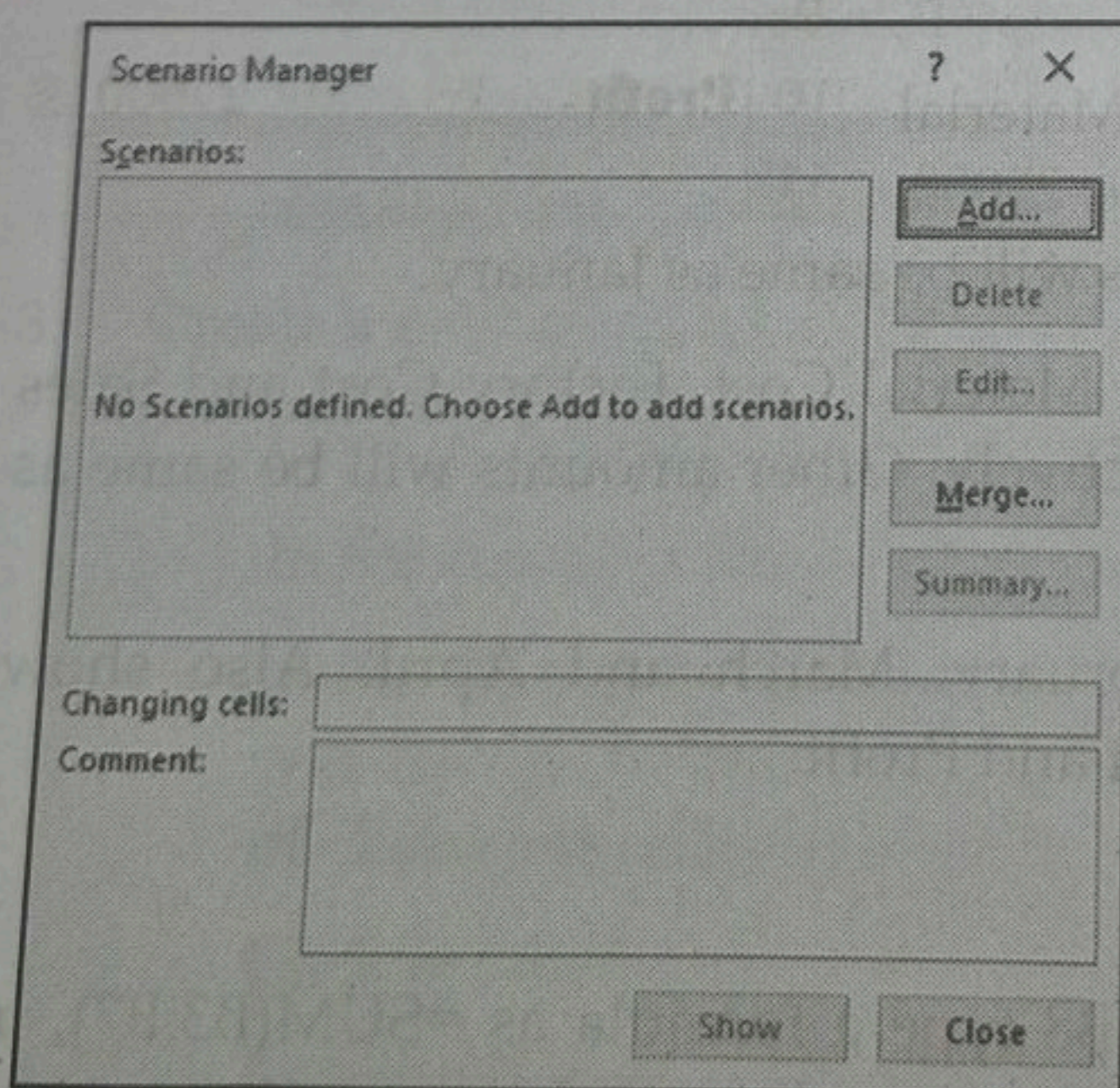
7. Click at Add Button.

Type Scenario Name as **Apr**

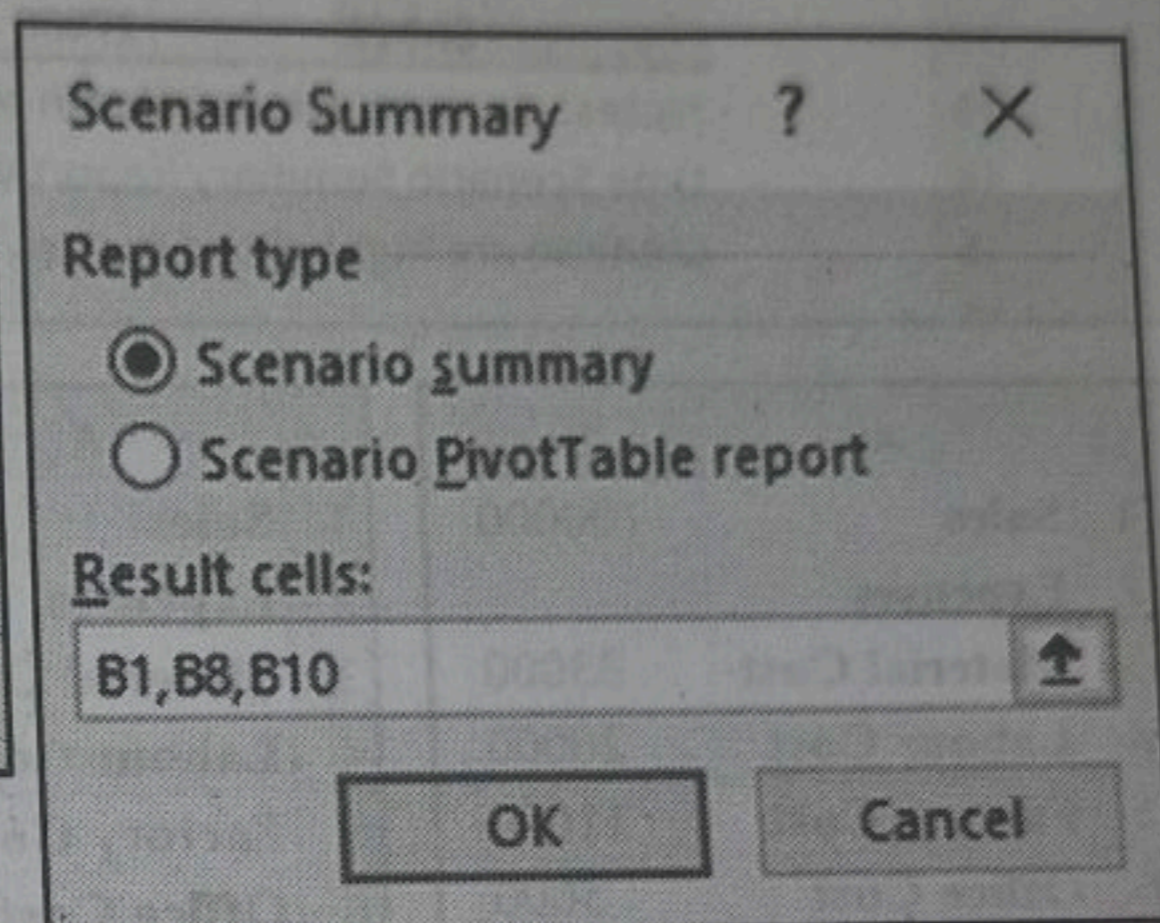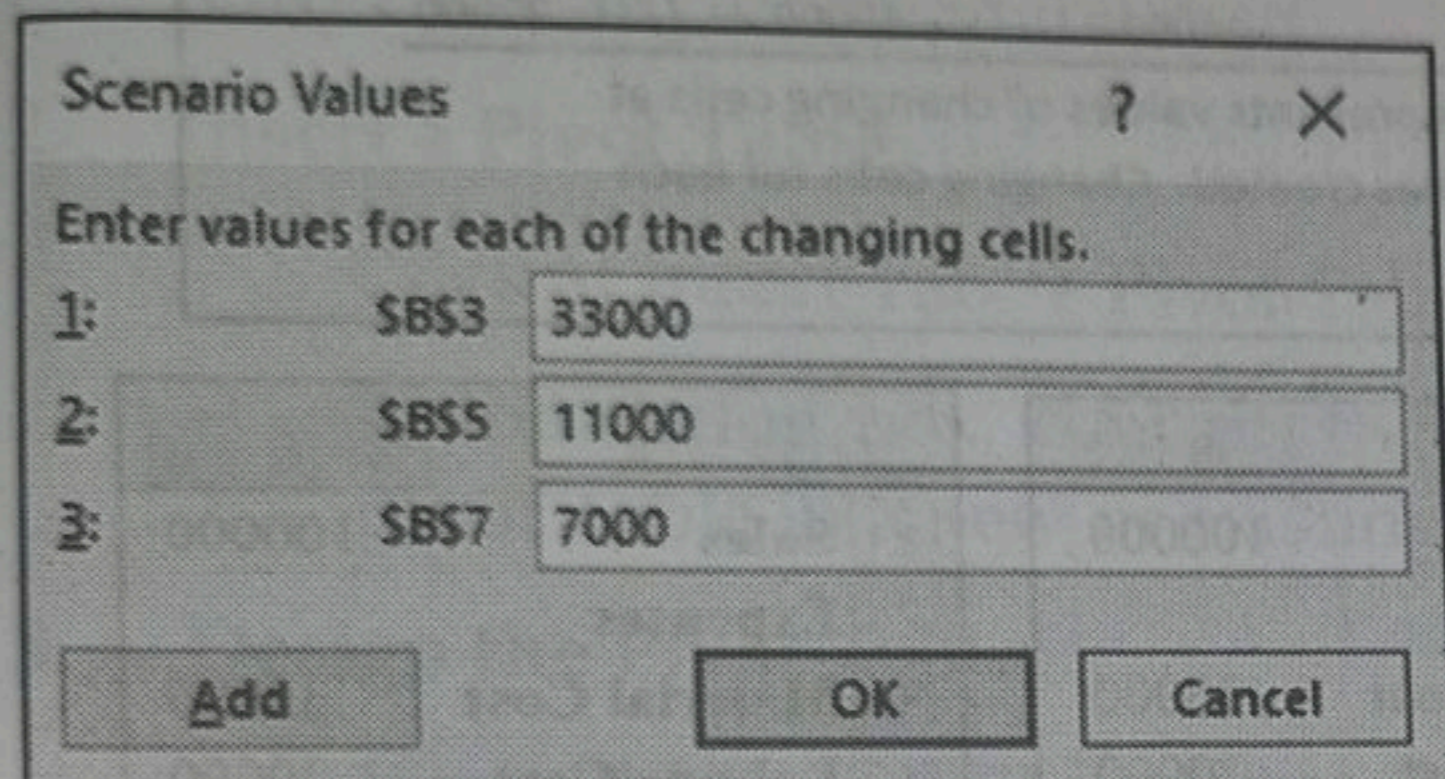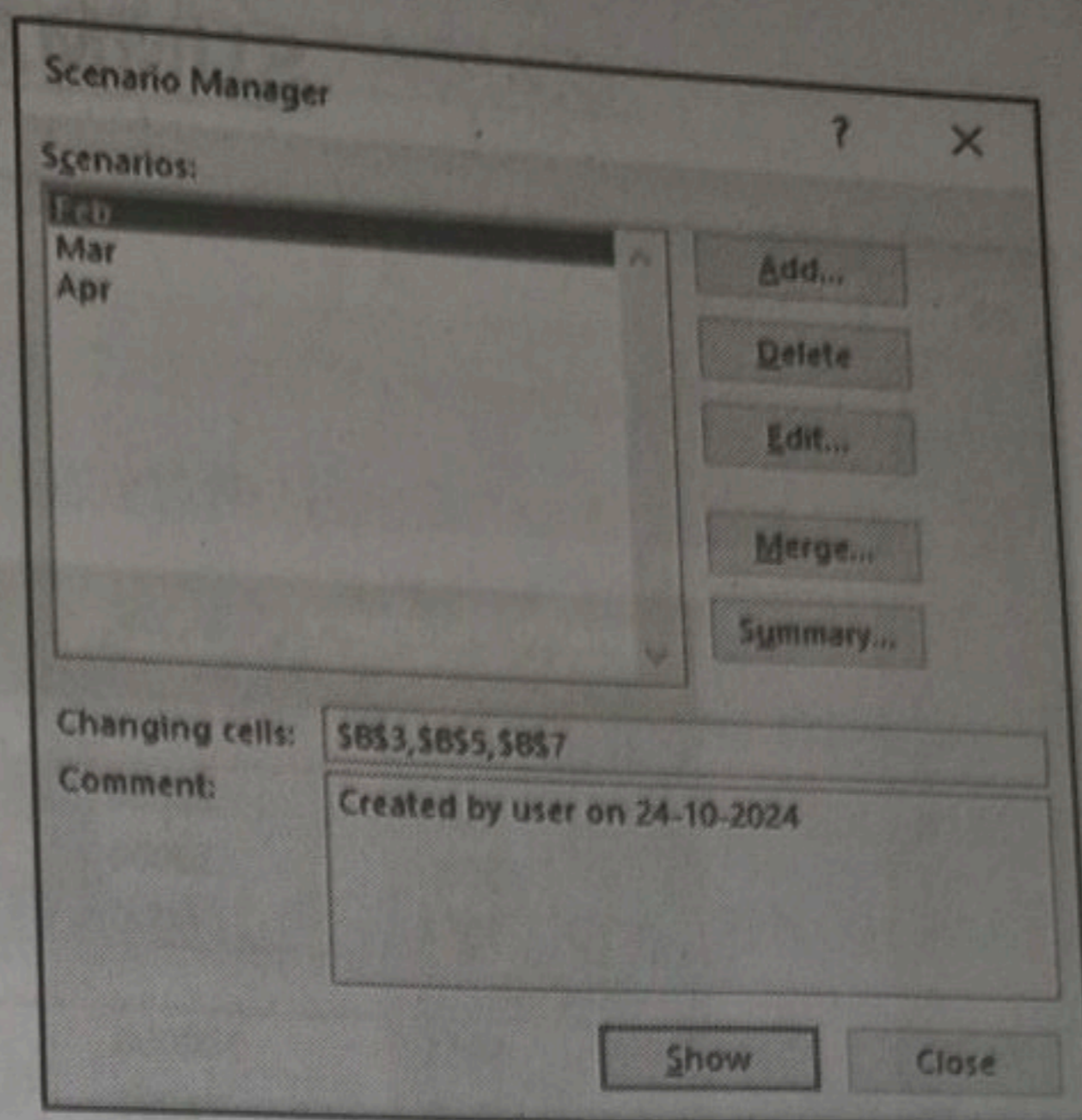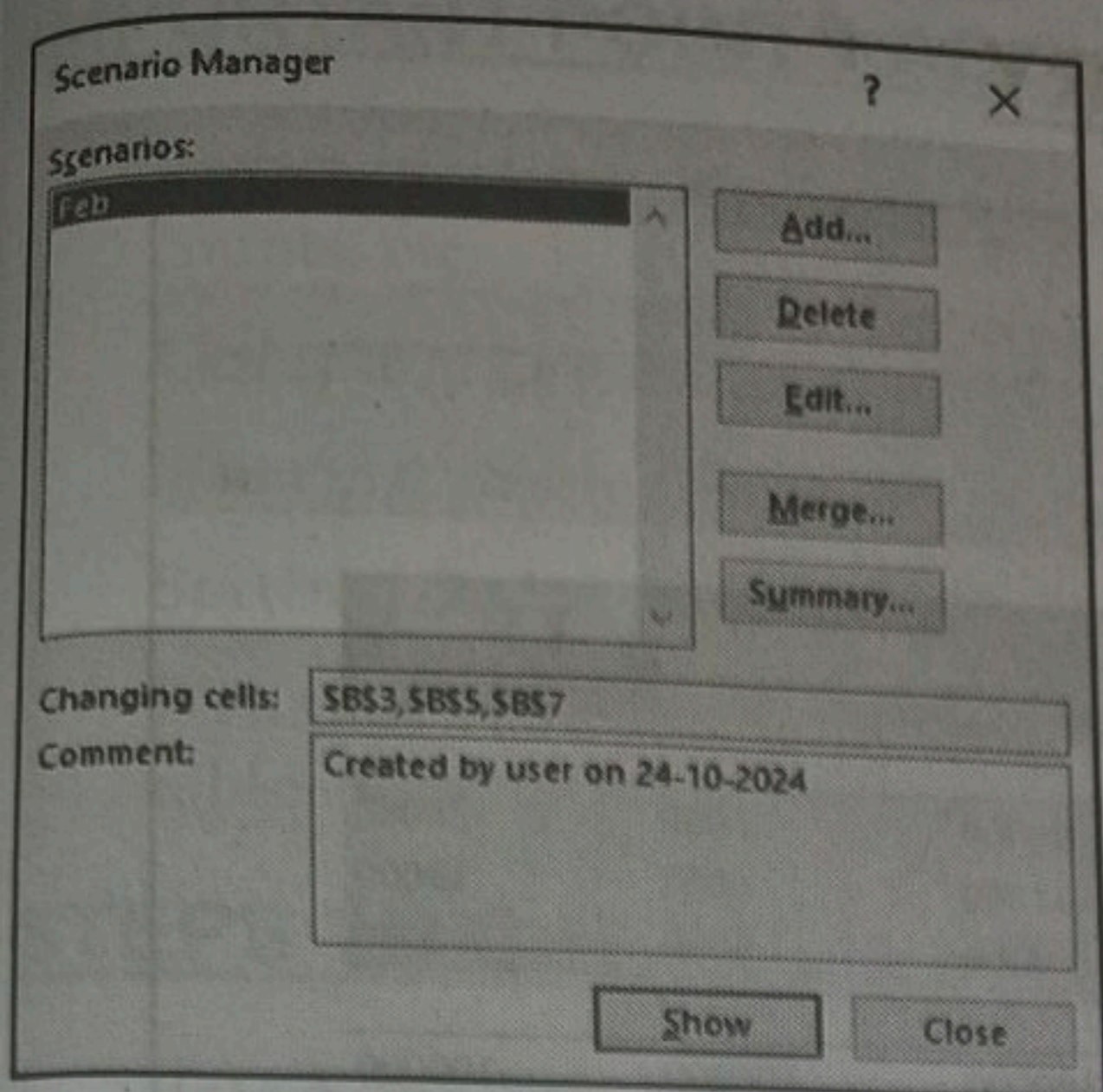Type Changing cell as **B3, B5, B7**

Click at **Ok** Button.

8. Type Changing Values as **32000, 13000, 8000** respectively

Click at **Ok** Button

(With this third Scenario is created; now we can display the Summary or we can display any Scenario)

Scenario Manager (Dialog 1)

Scenario Manager   ?   ✕

Scenarios:

Feb

Buttons: Add... | Delete | Edit... | Merge... | Summary...

Changing cells: $B$3,$B$5,$B$7

Comment: Created by user on 24-10-2024

Show   Close

Scenario Manager (Dialog 2)

Scenario Manager   ?   ✕

Scenarios:

Feb
Mar
Apr

Buttons: Add... | Delete | Edit... | Merge... | Summary...

Changing cells: $B$3,$B$5,$B$7

Comment: Created by user on 24-10-2024

Show   Close

Scenario Values

Scenario Values   ?   ✕

Enter values for each of the changing cells.

1:	$B$3	33000
2:	$B$5	11000
3:	$B$7	7000

Add   OK   Cancel

Scenario Summary

Scenario Summary   ?   ✕

Report type

◉ Scenario summary
○ Scenario PivotTable report

Result cells:

B1,B8,B10   ⬆

OK   Cancel

9. Now to display any of the created Scenarios, click at the Scenario name and click at Show Button.

10. To see the summary, click at Summary Button

11. In the Result cells type B1, B8, B10 (As we want to see effect on these 3 cells)

   Click at Ok Button.

   (Excel will display the Summary of all the Scenarios along with the original values in the new sheet.)

12. Click at Close button to close Scenario Manager.

   (Next time, when you will start Scenario Manager you will see all the Scenarios created earlier, you can Add / Delete/ Edit scenarios).

SUMMARY

	Scenario Summary	Current Values	Feb	Mar	Apr
	Changing Cells:				
	$B$3	30000	33000	25000	32000
	$B$5	10000	11000	6000	13000
	$B$7	8000	7000	9000	8000
	Result Cells:				
	$B$1	100000	100000	100000	100000
	$B$8	73000	76000	65000	78000
	$B$10	27000	24000	35000	22000

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.

	A	B
1	Sales	100000
2	Expenses	
3	Material Cost	33000
4	Labour Cost	20000
5	Factory Cost	11000
6	Office Cost	5000
7	Sales Cost	7000
8	Total	76000
9		
10	Profit	24000

Feb Scenario

	A	B
1	Sales	100000
2	Expenses	
3	Material Cost	25000
4	Labour Cost	20000
5	Factory Cost	6000
6	Office Cost	5000
7	Sales Cost	9000
8	Total	65000
9		
10	Profit	35000

Mar Scenario

	A	B
1	Sales	100000
2	Expenses	
3	Material Cost	32000
4	Labour Cost	20000
5	Factory Cost	13000
6	Office Cost	5000
7	Sales Cost	8000
8	Total	78000
9		
10	Profit	22000

Apr Scenario

PIVOT TABLES

WHAT IS A PIVOT TABLE?

A Pivot Table in Excel is a powerful tool that allows you to summarise, analyse, explore, and present your data in a flexible and dynamic way. It enables you to transform large datasets into meaningful reports by easily grouping, filtering, and sorting data without altering the original dataset. Pivot table gives you a quick report and further if you want then you can get pivot chart also. The Pivot table report is always sorted, organised, and summarised. Pivot table report can be placed on existing worksheet or on a new worksheet as per your requirement.

IMPORTANT POINTS ABOUT PIVOT TABLES:

- **Summarisation**: It allows quick data summaries, such as totals, averages, counts, etc.

- **Grouping**: Organise data into categories and subcategories.

- **Filtering**: Easily filter the data you want to focus on.

- **Sorting**: Order the data in ascending or descending order.

- **Dynamic**: You can easily drag and drop fields to change the structure of the table.

STEPS TO CREATE A PIVOT TABLE IN EXCEL:

1. **Select the Data Range**: Highlight the range of data you want to analyse. (OR) Click anywhere in the data.

2. **Insert a Pivot Table:**

   - Click at Insert Tab → Pivot Table Icon

   - In the dialog box, confirm the range and choose whether to place the Pivot Table in a new or existing worksheet.

3. **Design the Pivot Table:**

   - **Pivot Table Field List**: Once the table is inserted, you will see the Pivot Table Field pane on the right.

   - Drag and drop fields into four areas:

   - **Rows**: Categories for rows.

   - **Columns**: Categories for columns.

   - **Values**: Data to be summarised.

Common Functions in Pivot Tables: (You can have one or more)

- **Sum**: Adds the selected data values. (Default for Numeric Field)

- **Average**: Finds the average of the selected data.

- **Count**: Counts the number of entries. (Default for Text Field)

- **Max/Min**: Finds the maximum or minimum values.

- **Filters**: Used to filter specific data subsets.

PIVOT TABLE OPTIONS:

Sort: You can sort rows or columns in ascending or descending order.

Filter: You can apply filters to only display relevant data.

Refresh: When the underlying data changes, the Pivot Table does not update automatically. You must click Refresh (under the Pivot Table Analyse Tab). (OR) Data Tab → Refresh All Icon.

Example: Consider the following worksheet. Create a department-wise report showing Number of Employees, Highest Salary and Total Salary.

	A	B	C	D
1	NAME	AGE	DEPT	SALARY
2	SUDHIR	23	ADMN	12000
3	SKY	25	A/C	13000
4	SANJAY	28	PUR	15000
5	ALISHA	22	A/C	14000
6	TANIA	22	PUR	13500
7	JESSE	23	ADMN	15500
8	SANCIA	25	ADMN	13000
9	SHANIZA	24	SALES	12000
10	MUSCAN	28	PUR	14000
11	DEEP	22	PUR	15500
12	MANAN	28	SALES	12000

Solution:

Pivot Table

1. Click anywhere in the data. (A1:D12)
2. Click at Insert Tab → Pivot Table Icon
   - Select table range as A1:D12
   - Select New Worksheet
   - Click at Ok Button.

PivotTable from table or range   ?   ✕

Select a table or range

Table/Range: Sheet4!SAS1:SDS12

Choose where you want the PivotTable to be placed

⦿ New Worksheet
◯ Existing Worksheet

Location:

Choose whether you want to analyze multiple tables
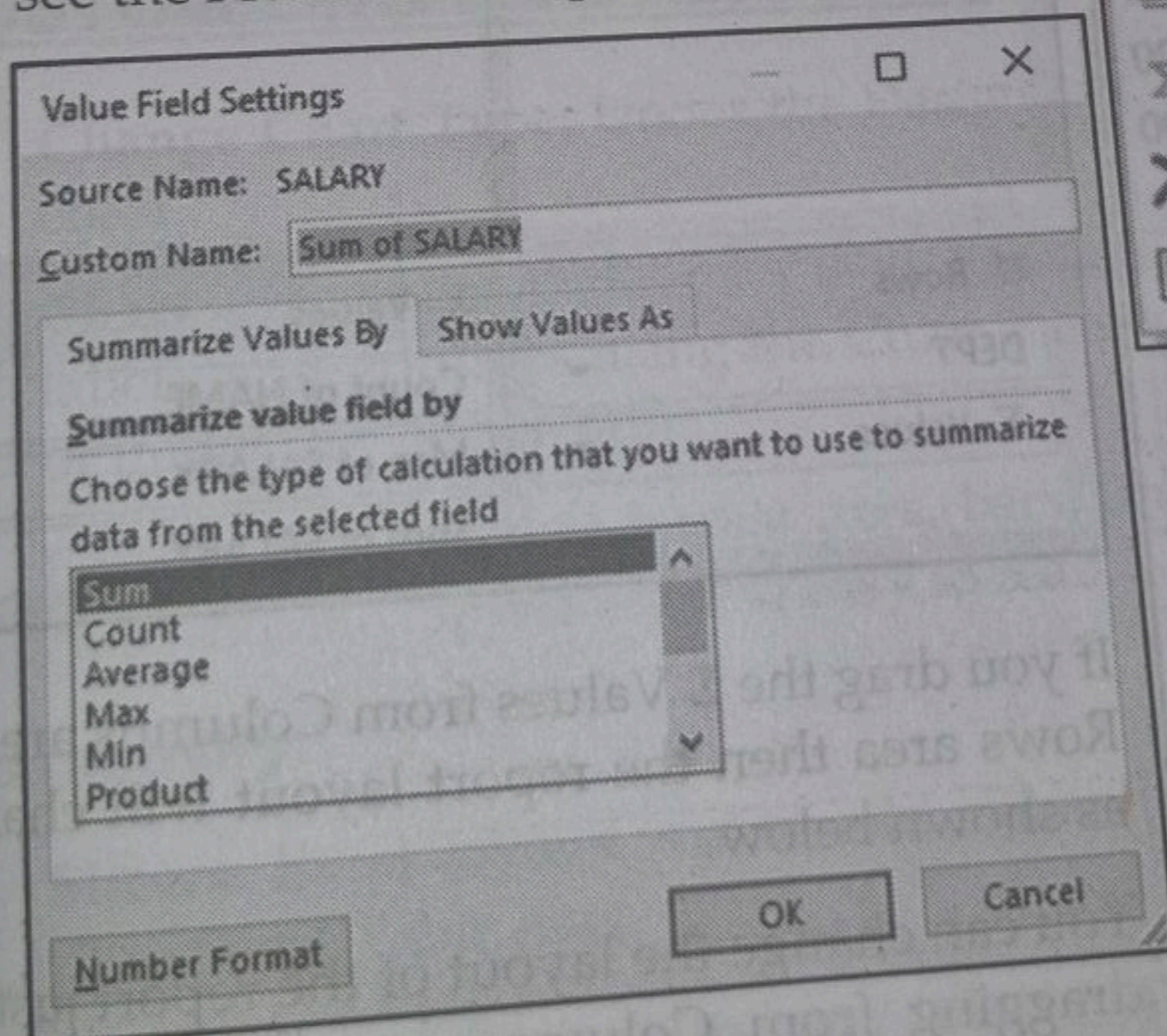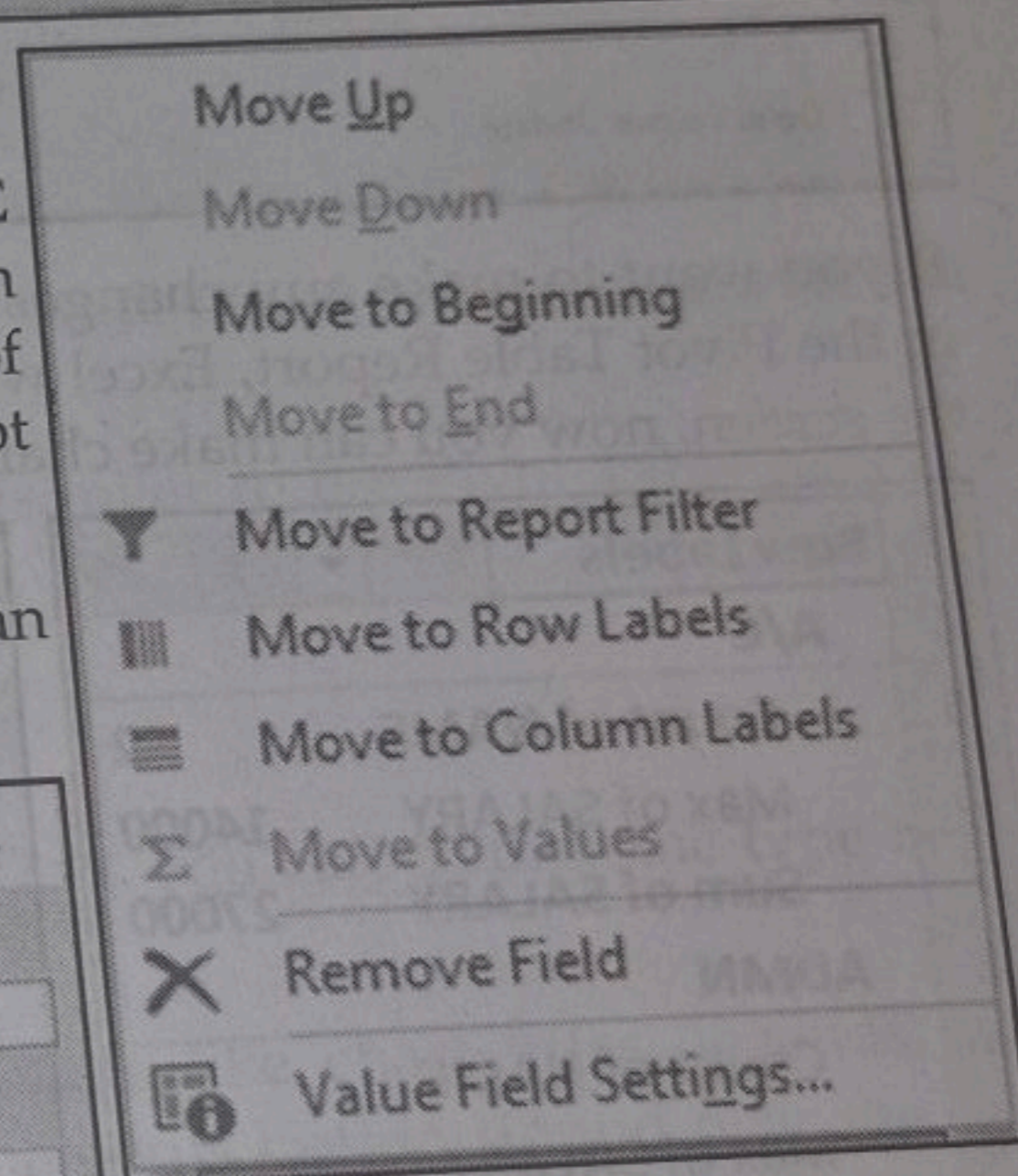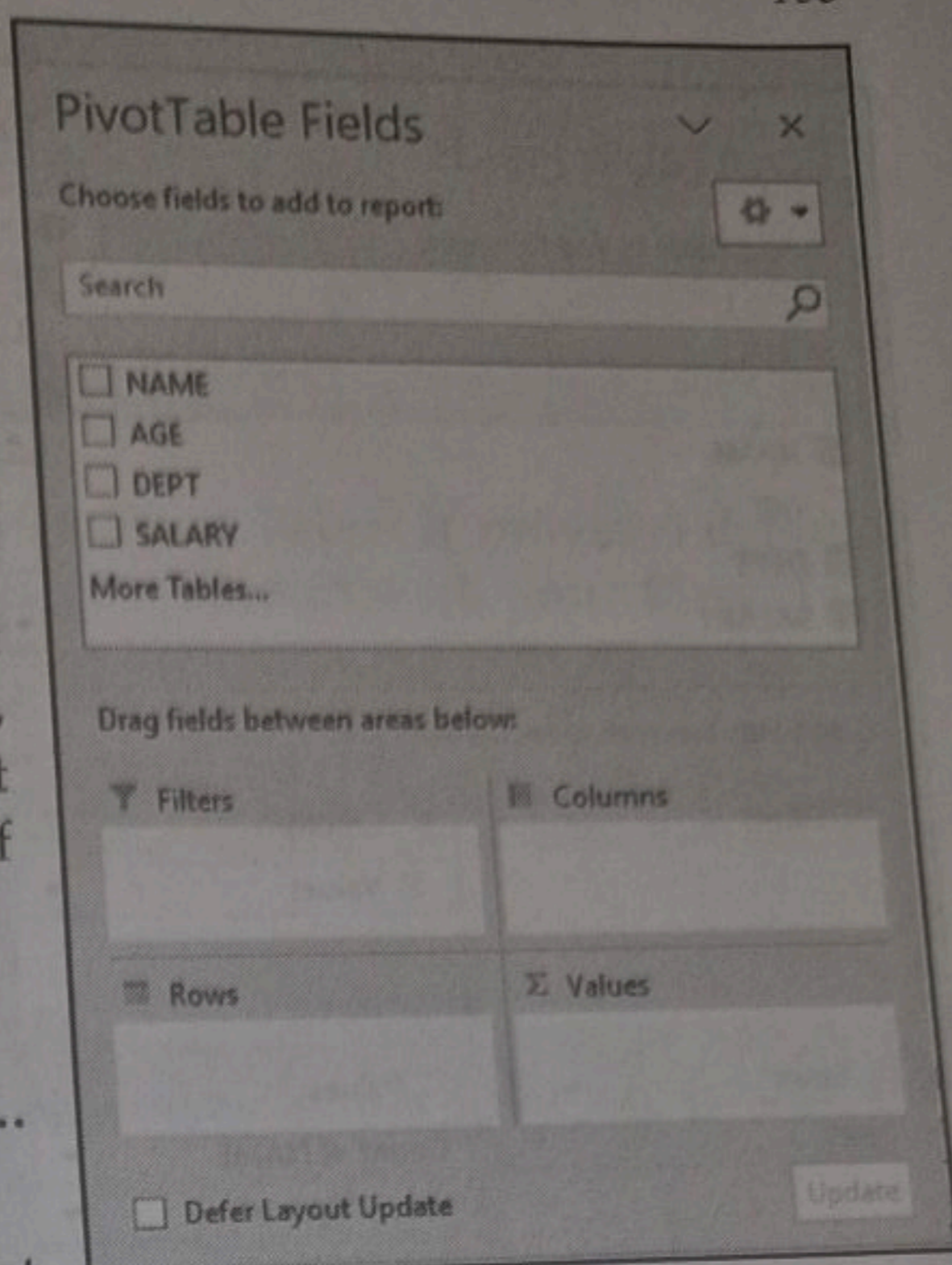
☐ Add this data to the Data Model

OK   Cancel

Now Excel will display PivotTable Fields dialog box as shown on the right-hand side.

1. Drag **DEPT** field to **Rows** area. (As we want the report Department wise).

2. Drag **NAME** field to **Σ Values** area, automatically it becomes Count of NAME. (As NAME is a text field it becomes Count automatically.)

3. Drag **SALARY** field to **Σ Values** area, automatically it becomes Sum of SALARY. (As SALARY is a numeric field it becomes Sum of SALARY.) but, we do not want SUM, we want highest i.e. MAX. So, to change Sum of SALARY to Max of SALARY,

   - **Click at Sum of SALARY;**

   - Select **Value Field Settings...** from the available options

   - Select **Max** function and click at Ok Button.

4. Once again drag **SALARY** field to **Σ Values** area, automatically it becomes Sum of SALARY. (This time we want total of Salary i.e. Sum of SALARY, so, do not change it.)

5. Now click at any blank cell and you can see the Pivot Table Report.

PivotTable Fields

Choose fields to add to report:

Search

☐ NAME
☐ AGE
☐ DEPT
☐ SALARY
More Tables...

Drag fields between areas below:

▼ Filters	▥ Columns

▥ Rows	Σ Values

☐ Defer Layout Update   Update

Move **U**p
Move **D**own
Move to Beginning
Move to **E**nd
▼ Move to Report Filter
▥ Move to Row Labels
☰ Move to Column Labels
Σ Move to Values
✕ Remove Field
▦ Value Field Settin**g**s...

Value Field Settings   — □ ✕

Source Name: SALARY

Custom Name: Sum of SALARY

Summarize Values By   Show Values As

Summarize value field by

Choose the type of calculation that you want to use to summarize data from the selected field

Sum
Count
Average
Max
Min
Product

OK   Cancel

Number Format

PivotTable Fields

Choose fields to add to report:

Search

- ☑ NAME
- ☐ AGE
- ☑ DEPT
- ☑ SALARY

Drag fields between areas below:

▼ Filters	▥ Columns
	Σ Values ▼

▤ Rows	Σ Values
DEPT ▼	Count of NAME ▼
	Max of SALARY ▼
	Sum of SALARY ▼

☐ Defer Layout Update   Update

A3			fx	Row Labels
	A	B	C	D
1				
2				
3	Row Labels ▼	Count of NAME	Max of SALARY	Sum of SALARY
4	A/C	2	14000	27000
5	ADMN	3	15500	40500
6	PUR	4	15500	58000
7	SALES	2	12000	24000
8	Grand Total	11	15500	149500
9				

If you want to make any changes in the Pivot Table Report then click anywhere in the Pivot Table Report, Excel will display the Pivot Table Fields dialog box on the screen, now you can make changes in the Pivot Table Report.

3	Row Labels ▼	
4	A/C	
5	Count of NAME	2
6	Max of SALARY	14000
7	Sum of SALARY	27000
8	ADMN	
9	Count of NAME	3
10	Max of SALARY	15500
11	Sum of SALARY	40500
12	PUR	
13	Count of NAME	4
14	Max of SALARY	15500
15	Sum of SALARY	58000
16	SALES	
17	Count of NAME	2
18	Max of SALARY	12000
19	Sum of SALARY	24000
20	Total Count of NAME	11
21	Total Max of SALARY	15500
22	Total Sum of SALARY	149500

Drag fields between areas below:

▼ Filters	▥ Columns

▤ Rows	Σ Values
DEPT ▼	Count of NAME ▼
Σ Values ▼	Max of SALARY ▼
	Sum of SALARY ▼

If you drag the Σ Values from Columns area to Rows area then the report layout will change as shown below.

You can change the layout of the report just by dragging from Columns area to Rows area and vice-a-versa.

Note: Pivot Table Report is not updated automatically when there is change in the original data. To update the Pivot Table Report after the change in the original data you have to click anywhere in the Pivot Table Report and click at **Data Tab → Refresh All Icon.**

PIVOT CHARTS

A Pivot Chart is a visual representation of a Pivot Table. It provides dynamic visualisation that updates automatically as you interact with your Pivot Table (e.g., filtering, sorting, and grouping).

STEPS FOR CREATING A PIVOT CHART:

1. **Insert a Pivot Chart:**

    - After creating a Pivot Table, click anywhere inside it.

    - Go to the Insert tab, and select a chart type under Charts (e.g., Column, Line, Pie, etc.).

    - Alternatively, you can go to the PivotTable Tools – Analyse tab and select PivotChart.

2. **Design the Chart:**

    - Excel will automatically generate a chart based on the current Pivot Table setup.

    - Use the PivotChart Field List pane (similar to the Pivot Table pane) to modify the data being displayed.

CUSTOMIZING PIVOT CHARTS:

- **Change Chart Type:** Under the Design tab, you can change the type of the chart.

- **Chart Elements:** Add or remove elements like chart titles, legends, data labels, and gridlines using the Chart Elements button (found near the chart or under the Design tab).

- **Formatting:** You can format axes, bars, lines, and chart styles to make the chart visually appealing and easy to read.

Interactivity:

- **Slicers:** Excel allows you to add slicers (visual filters) to make it easier to filter Pivot Table data.

- **Filters:** Pivot Charts reflect any filters applied in the underlying Pivot Table, providing a dynamic and interactive experience.

- **Drill-down:** You can explore data in more detail by double-clicking chart elements to drill down into the data.

## Common Chart Types for Pivot Charts:

- **Column Chart:** Ideal for comparing data across categories.
- **Bar Chart:** Similar to column charts, but horizontal.
- **Line Chart:** Great for showing trends over time.
- **Pie Chart:** Best for displaying the composition of data (e.g., sales by category).
- **Scatter Plot:** Useful for showing relationships between two variables.

DIFFERENCES BETWEEN PIVOT TABLES AND PIVOT CHARTS

Feature	Pivot Table	Pivot Chart
Purpose	Summarise and analyse data in tabular format	Visualise data in graphical form
Interactivity	Interactive table with drag-and-drop features	Interactive with filters and slicers
Data Presentation	Data presented in rows and columns	Data presented graphically using charts
Use Cases	Best for detailed data analysis and summaries	Best for making data easier to understand visually
Updates	Updates with data changes after Refresh All command	Linked to a Pivot Table and updates automatically

Points to remember for Using Pivot Tables and Charts:

- **Keep Source Data Clean:** Ensure the dataset has no blank rows or columns, and each column has a clear header.

- **Refresh Often:** If the source data is dynamic, make sure to refresh the Pivot Table regularly.

- **Use Slicers Carefully:** While slicers add interactivity, too many can clutter your workbook.

- **Choose the Right Chart Type:** Use chart types that best represent your data (e.g., line charts for trends, pie charts for parts of a whole).
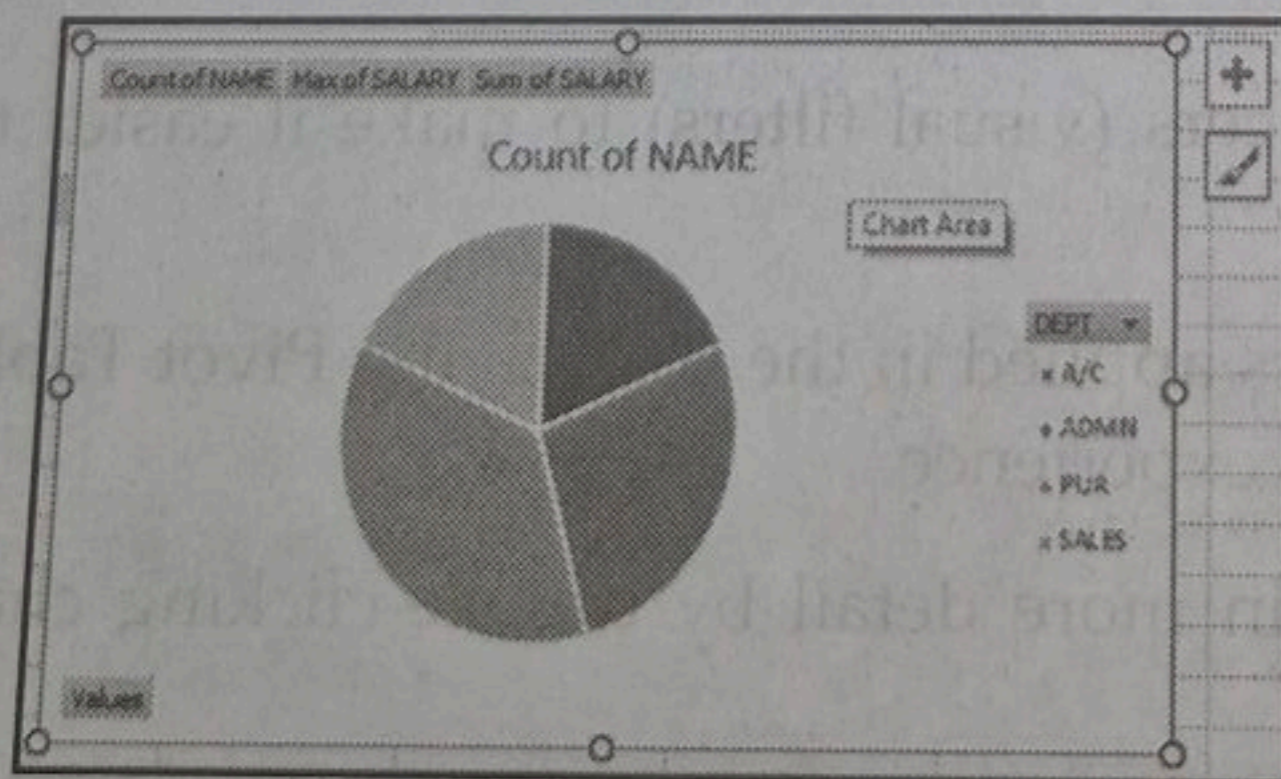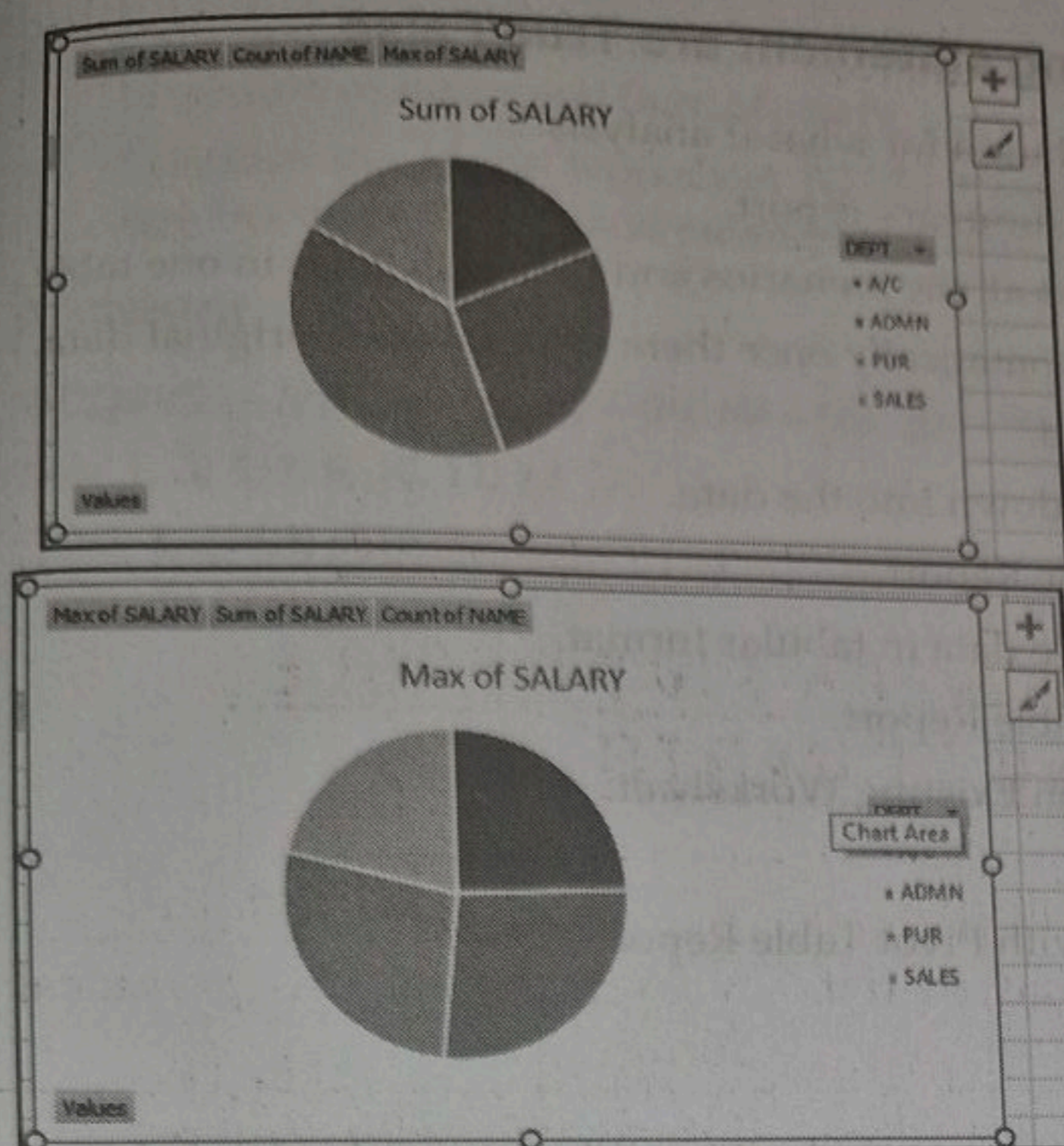
Scenarios and Pivot Tables

EXERCISE

A. Multiple Choice Questions – Single correct answer :

1. Scenario Manager option is available under _____ Tab.
   - (a) Home
   - (b) Insert
   - (c) Data
   - (d) View

2. Scenario Manager option is available under _____ group.
   - (a) Sort & Filter
   - (b) Data Tools
   - (c) Forecast
   - (d) Outline

3. The maximum number of changing cells for a Scenario is limited to ___.
   - (a) 16
   - (b) 32
   - (c) 64
   - (d) None of These

4. Pivot Table Report is always _____.
   - (a) Sorted
   - (b) Organised
   - (c) Summarised
   - (d) All of These

5. Pivot Table option is available under _____ Tab.
   - (a) Home
   - (b) Insert
   - (c) Data
   - (d) View

6. While constructing a Pivot Table, when you drag a text field to Σ Values area it becomes ___ automatically.
   - (a) Sum
   - (b) Min
   - (c) Max
   - (d) Count

7. While constructing a Pivot Table, when you drag a numeric field to Σ Values area it becomes ___ automatically.
   - (a) Sum
   - (b) Min
   - (c) Max
   - (d) Count

8. Bar Chart is similar to _____ chart, but horizontal.
   - (a) Line
   - (b) Column
   - (c) Pie
   - (d) Area

B. State whether the following statement are True/False :

1. Scenario Manager is a useful tool used for what-if analysis.
2. Excel cannot generate a scenario summary report.
3. A scenario summary report shows all the scenarios and their outcomes in one table.
4. Pivot Table Report is updated automatically once there is a change in original data.
5. Pivot Table report is always sorted.
6. With Pivot chart you cannot drill down into the data.
7. You can apply filters in Pivot Table Report.
8. Pivot Chart summarise and analyse data in tabular format.
9. Pivot Chart is linked with Pivot Table Report.
10. Pivot Table Report can be placed on Existing Worksheet.
11. Size of a chart can be changed.
12. You can create Pivot Chart along with Pivot Table Report.

C. Practical Questions :

1. Consider the following worksheet:

Nationalised Bank is offering 7% p.a. interest rate. Co-op. Bank is offering 7.4% p.a. interest rate. Credit Society offers 7.75% p.a. interest rate. Create Scenarios for each case display summary report showing the interest rate and compound interest. Also display scenario of Co-op. Bank.

	A	B	C
1	Rate of Interest P.A.		8%
2			
3	Amount	No. Of Years	Comp. Int.
4	150000	4	50320.37

2. Consider the following worksheet.

Create scenarios for following three cases.

(a) Best: HRA Rate 25% and DA Rate 50%.

(b) Likely: HRA Rate 15% & DA Rate 40%.

(c) Worst: HRA Rate 10% & DA Rate 15%.

	A	B	C	D	E
1	HRA Rate	5%			
2	DA Rate	10%			
3					
4	Name	Basic	HRA	DA	Gross
5	Ajay	20000	1000	2000	23000
6	Vijay	25000	1250	2500	28750
7	Sunil	18000	900	1800	20700

3. Consider the following worksheet:

Create Age-wise report showing Average of salary and total of salary.

	A	B	C	D
1	NAME	AGE	DEPT	SALARY
2	SUDHIR	23	ADMN	12000
3	SKY	25	A/C	13000
4	SANJAY	28	PUR	15000
5	ALISHA	22	A/C	14000
6	TANIA	22	PUR	13500
7	JESSE	23	ADMN	15500
8	SANCIA	25	ADMN	13000
9	SHANIZA	24	SALES	12000
10	MUSCAN	28	PUR	14000
11	DEEP	22	PUR	15500
12	MANAN	28	SALES	12000

4. Consider the above worksheet (Q. 3): Create a department-wise report showing Minimum of salary and Sum of salary.

5. Consider the above worksheet (Q. 3): Create a department-wise report showing number of employees and average of salary.

Answers:

MCQs: (1) – (c), (2) – (c), (3) – (b), (4) – (d), (5) – (b), (6) – (d), (7) – (a), (8) – (b)

True: 1, 3, 5, 7, 9, 10, 11, 12

False: 2, 4, 6, 8